The Builder.

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School Planning: Middle-Class Education.

SCHOOL BOARDS, and other parts of the modern machinery of Primary Education have done enough hard work to merit opprobrium from worthy ratepayers, and to excite dread visions of the country's ruin at the hands of an over-educated common people. Out of about a million and a half children presented for examination in Annual Grant Schools in 1878,—a few over 30,000 passed in reading in Standard VI., that is, were able to read with fluency and expression; about 30,000 could write a short theme or letter, or an easy paraphrase; but some 7,500 of these failed when tested in "proportion and fractions (vulgar and decimal)." It might be thought by an onlooker that these statistics should be a potent charm,—that their mere repetition might serve to banish care and panic, and that the middle-classes might surely possess their souls in peace and comfort for several years to come. That sort of evidence of arrears in Primary Education, and of dulness among the children of wage-paid people, might justify some contempt for middle-class renegades, who make much of the fact that "the English middle-classes are nearly the worst educated in the world," repeating thus word for word what Mr. Matthew Arnold, with most unpleasant candour, went out of his way to write in 1861, when reporting on popular education in France. Signs of coming changes have, however, become more and more decided in the course of the years since that was written, and apparently the descent has now been fairly begun. Notwithstanding much wavering and looking back, it will probably be continued at an accelerating pace, and will land us at last in a world in which the Commercial Academy will have no existence, where the announcement that a quarter of the scholars in Public Elementary Schools have passed in the three higher standards will be heard without uneasiness, and it will be a subject for satisfaction that England has

> "Bound herself by statute to secure,
> For all the children whom her soil maintains,
> The rudiments of letters, so that none
> . . . . . be forced
> To drudge through weary life without the aid
> Of intellectual implements and tools."

Mr. Cross, the Home Secretary, in opening the new Grammar School at Wigan last week, showed some of the changes which are taking place,—according to his custom, not emphasised by sounding rhetoric, which unfortunately is not at his command, but by the effective use of eloquent statistics:—

"I look upon it as absolutely essential that this question of secondary education should be carefully attended to. Every possible assistance should be given to those boys who show remarkable ability and industry, enabling them to rise from class to class. Under the Endowed Schools Act, the Commissioners have had considerable difficulties to contend with. Dealing with existing endowments,—some being endowments by persons who left lands which have become far more valuable than when they were originally left,—it has happened that in small places they have found vast endowments which they have not known what to do with, because there were no wants in the district to consume all the money; whilst, in populous places which have been comparatively poorly endowed, there were not endowments sufficient to meet the wants of those neighbourhoods. Nevertheless, they have done a great deal. They have powers under their Act, when they have satisfied the wants of the district, to apply the funds in other ways, and in this particular matter I think they have done good service. They have made 515 schemes, and those schemes absorb endowments to the extent of about 260,000*l.* a year. They have at the present moment under their consideration 170 schemes, which represent an income of 177,000*l.* a year; so that, altogether, we may say that 485 schools and institutions of a similar character have been dealt with, having endowments amounting to not very far short of 500,000*l.* a year. There are still some 400 schools to deal with, and an annual income of 166,000*l.*; and no doubt before long this great work will be practically completed. It is, however, no use having schools unless you have scholars in them, and it is most satisfactory that in all the schools renovated under the Endowed Schools Commission, the moment the scheme has had a fair start the increase in the number of scholars has been something enormous. There was a school at Newcastle, an excellent school, at least so far as it went at the time. It had only seventy scholars. It has passed through the mill of the Endowed Schools Commission, and has come out reinvigorated, and the scholars already number 400. There was a group of schools in Yorkshire which had an income, altogether, of about 4,000*l.* a year, and in which 300 scholars were educated. The number of scholars since those schools were remodelled has advanced nearly 1,000. In one of the hospitals at Hoxton, where twenty scholars were educated free out of the funds, there has been an entire remodelling, and instead of twenty scholars the present number is 1,094."

This tone of confidence in the present and the future has something cheering in it,—suggestive of success well hoped for and therefore likely to be attained,—which is better after all than a state of querulous acquiescence in the inevitable.

The problems to be solved by the combined efforts of statesmen, parents, schoolmasters, and architects might be enunciated in an informal way, in scanning the daily work and the range of studies of some vigorously-conducted middle-class school, which happened to be an example of what statesmen and many parents wish to become less and less rare. In the course of such a survey we should think specially—as would befit our function—of the way in which a capable architect would set about designing the building properly fitted for such a school,—so as to make of it a well-devised manufactory in which a skilful master-craftsman would find all the tools ready to his hand, by which some of the most active spirits of their time may be "battered to shape and use." The City of London School would supply somewhat conveniently such an illustration. "The object of the school is to furnish a liberal and useful education for the sons of respectable persons who are engaged in professional, commercial, or trading pursuits, without the necessity of removing them from the care and control of their parents." In other words, it is a good day-school, mainly for the class which is in the exact middle of the middle class,—for the sons of master-tradesmen, mostly in wholesale trade, and of that body of people who, though in receipt of salaries, have about the same social rank. Having nearly 700 scholars, there is a strong staff of teachers, and the boys have the sense of belonging to a great school, with some traditions and with a future, which has often a powerful influence in promoting some of the finer kinds of ambition. There would this week be a special additional reason for the selection. The competition for the new building, intended to be erected at the expense of the City on an acre and a half of City land on the Embankment just by Blackfriars Bridge, has not long been decided. When it was announced, the architectural profession was a good deal exercised. The profession is all too prone to enterprise and emulative tasks; and the magnificent site, and the interesting and difficult problem to be worked out upon it, piqued many into competing who had laid aside the habit, and others who had indulged in it but rarely. In our careful review of the fifty-three designs submitted in the competition (page 792, *ante*), we gave a preference to the design "Move,"—calling it "the best plan of those submitted, one of the cleverest plans we have seen,—the architectural treatment above the average, and peculiarly suited in character to the purpose of the building." This design proved thereafter to be one of six picked out for special reconsideration by the committee and a week or two ago the Court of Common Council awarded to its authors, Messrs. John & S. Flint Clarkson, a special premium "on account of the great ability shown in the design." We have made an exception to our ordinary rule, and considered that plans and a view of this design,—though it is not accepted for execution,—might with advantage be shown to our readers, seeing that in the nature of things so good a type of plan can hardly fail to be adopted in not a few cases, now that there is a probability of great day-schools being erected in considerable numbers in and about great towns. There are other types,—plans actually executed and prepared for execution,—which also deserve attention, and will receive it at our hands,—as time goes on, and the public interest in the subject brings it more and more to the front.

The scheme of pupils' work in the City of London School, although planned out in detail, cannot come fully into use until a suitable building is provided. The separate classes, the combined classes, the assembly in the hall, and the use of the playground are the salient features. For each boy in the school his class-room is in effect a little school under its own master; but the boys in each class-room will be made to feel themselves part of the whole

school, being assembled with the rest at least once a day. The class-master leaves his class-room, and the class goes out of his charge for a time, while a special lesson on some obligatory subject is being given,—for instance, when the French master comes on the scene. One lecture a week is given in the lecture-room to every scholar in natural science,—the classes most equal in standing being taken from their class-rooms and grouped for the purpose. A boy's day is broken into two sections, and each of these divided again by a short interval. At about a quarter to nine he may be expected to appear in the playground; at nine comes the summons to the general assembly in the hall—for prayers; then the dispersal into the class-rooms; a break of ten minutes or a quarter of an hour, and a visit to the playground about eleven; class-rooms again till twelve, and then the first section of the day is over. The ways from the hall to the class-rooms, and from them to the playground, must evidently be neither strait nor single. The playground plays an important part. While limbs are being warmed, and fresh air breathed in the playground, the used air can be cleared out and the class-rooms freshened, ready for the return of the boys after the interval. For any day-school in a considerable town an ample playground is not, however, merely a luxury conducive to health and comfort,—it is also absolutely necessary for good discipline. When there is play-space, it is possible to make it a rigid rule that every pupil shall remain on the premises, from the time of entry till the time of leaving. From half-past twelve the afternoon school continues to three, with a short interval in the middle of that time. The assembly in the hall for prayers may take place then. The final departure is a subject for drill. The boys having furnished themselves with coats, caps, and bags, and returned to their class-rooms, the building will be completely cleared in a few minutes after the order to leave is given. All the cloak-rooms should obviously be reached directly from the class-rooms, and wide corridors should lead to the principal entrance, which is the only entrance and exit for everybody belonging to the school. On Wednesday and Saturday, after twelve, all the younger boys take holiday, and such of the others as do not require lessons in the optional subjects. These lessons,—in German, drawing, and vocal music, for instance,—are given in large class-rooms formed by combining two or more.

The distance from which boys of this class come, and should or might come, to school; the applications for admission; the selection by test examinations; the ages at which pupils are admitted and their previous training; the ages at which pupils leave school, and the course of life chosen for them; the way in which the size of classes is affected by the ages of admission, by the removes, and by limits of age for remaining in certain classes; the obligatory and the optional studies; the school examinations; the university examinations for prizes and scholarships; the history of the school, holidays, boarding, and dining, and a host of other subjects, ought in good right to be well apprehended by an architect, in order that he may get and keep well in mind the exact type of school for which he is to supply a home. If something was said here in detail about almost every one of them some excellent educationists might read the whole with relish. A list of the acquirements of the ordinary intelligent boy, leaving what is known as the Latin class for business, between fifteen and sixteen years of age, may be of general interest, and must be considered sufficient by us at this time. His course of instruction will have comprised English, Latin (Cæsar, Ovid, Virgil), French, about three books of Euclid, algebra up to quadratic equations, arithmetic, writing, book-keeping, geography, history, and the elements of chemistry and natural philosophy. He will have had some training in vocal music; for it is obligatory in the lower classes, though optional in the part of the school which he will have reached. If likely to be useful to him in life, he has gone through a special course in the practical chemistry class-room; and has had drawing, and possibly German, lessons on the Wednesday and Saturday afternoons. Any description of the work in the higher classes would not stop short till the university was reached; and that part of the training,—although it is most necessary, because it improves the quality of the training lower down, and indeed throughout the school, and because it does something towards "uniting the various classes in the community by the strong bond of a common culture," and for plenty of other reasons, can, of course, only apply to a small per-centage of the scholars in the kind of intermediate school which we have immediately in view.

The following extracts, from the description furnished by the architects with the design now illustrated, will allow them to expound their views of what such a building should be. It is to be understood that we reproduce them in view of their bearing on the general subject of school planning, and not with reference to the recent competition (now closed):—

"The principal entrance is at the south-east corner;—a position selected, among other reasons, in order that the whole of the rooms devoted to administration may be in communication. These rooms are put in an unbroken line fronting the Embankment, so that all the windows would be reached by the sun, and would give a look-out over the road and the river. No other position for the entrance will allow this to be done. With the entrance in the centre of the façade, part of the rooms must be placed on one side of the entrance-hall and part on the other. The library, as it adjoins the committee-room, can be used as a waiting and special conference room, &c. A large clock-tower is placed over the entrance so as to give importance to it, and prevent the building being dwarfed by the adjoining hotel. The porter would control all entry to and exit from the building from his rooms on the right of the entrance-hall;—the book-room, the lift reaching every floor, and the porter's stairs carried down to the basement and up to the porter's residence at the top of the building, are placed on the same side of the entrance-hall. On the left side are the secretary's rooms,—and the rest of the administration occupies the remainder of the front next the river, the head-master's class-room being at the south-west angle, so that he may occupy the position between the administration and the other class-rooms.

The proper position for the hall, or large room for 1,000 persons, in which the school would meet for prayers, prize distributions, &c., would appear to be settled by the following consideration. The classes would pass in the *easiest possible* way from the hall to their respective class-rooms by several exits not interfering with each other, if the class-rooms were placed so as to surround the hall on every side. A large number of class-rooms deriving their principal light from the south, would not, however, be desirable; and, on this site, east class-rooms should be avoided, owing to the great height (between 80 ft. and 90 ft.) of the hotel adjoining. The larger number should be placed so as to derive their principal light from the north. The hall must, therefore, have its longer axis running east and west. As there will be only one story of class-rooms on the west, the end of the hall can be brought into view, in such a way that, although it is in the direct centre of the whole block of buildings, it will assert itself and largely influence,—as the largest and most important internal feature should do,—the external expression of the building. It should be specially designed for use as an auditorium, and have windows in all its walls, many of them carried fairly low down, so as to be available for additional classes, examinations, and other purposes. The walls would be pierced with thirteen doorways, a certain number in each of the four walls, ten being allowed for the use of the twenty classes of which the school is composed; so that only two classes would leave and enter by any one door, and the hall might thus be filled and cleared with the utmost ease and order.

The method of communication, between the different parts of the buildings, is almost decided on when courts have been placed on the north and south of the hall. For girdling corridors on two floors can then be well lighted in every portion. The west corridors on the ground floor would be lighted by windows placed above the roofs of the cloak-rooms, which are about 9 ft. in height, the height of the class-rooms and corridors on the same story being about 14 ft. A grand staircase would be a superfluity quite uncalled for by the uses of the building; but, as the south-east staircase would be used at times by ladies and others, there might be in it a little deviation from the plainness maintained elsewhere in the staircases, which are four in number,—one at each angle of the corridors. In order that the whole of the boys may reach the playgrounds from the ground-floor quickly and without confusion, double staircases would be provided in three positions,—making six staircases in all,—each staircase leading to the playgrounds being thus used by about 100 boys. The south-east and south-west staircases would be carried up to reach the lecture-room for natural science, 200 boys entering the room at the lower end; near the lecturer's platform from the south-west staircase, and the other 200,—the remainder of the 400 for whom the lecture-room would be constructed,—reaching the upper level of the seats by means of the south-east staircase. The science class-rooms, laboratory, &c., would be reached from the south-west staircase.

The northern aspect having been settled upon as above described for the larger number of the class-rooms, they will consequently look out upon the open space on the north of the buildings,—quiet thus being secured without double windows. The class-rooms are on two floors only. Thirteen out of the twenty are on the same floor as the head-master's rooms and the hall; this will allow a ready classification into senior and junior departments if desired. A young boy, placed in the north-east class-room on the first floor, would pass on at the removes till he reached the west class-room on that floor; and thereafter similarly on the principal floor he would pass from class-room to class-room in regular series, until he reached the head-master's class-room at the south-west corner of the building. The plan, therefore, expresses very simply the way in which progress in the school will be made. Every class-room is lighted from the left side of the desks. The three class-rooms in the centre of the west front can be combined so as to form one large room when necessary,—as for drawing lessons, being divided by double sliding-doors. These class-rooms are lighted by lantern-lights, and two class-rooms adjoining could be similarly lighted if so large a number of top-lighted rooms should be deemed desirable. The lantern-lights would ordinarily be closed by wood-shutters at the ceiling level, but during the drawing lessons the shutters would be opened, and the lower portions of the windows in the west walls of the class-rooms would be closed by shutters. Two class-rooms at the north-west angle of the building on the ground-floor, and the two over those on the first floor, have also double sliding-doors, so that these pairs of class-rooms can also be combined when required. As class-rooms arranged for being combined are not so serviceable as class-rooms wholly surrounded with brick walls, no more than the number decided upon as absolutely necessary should be formed. There are openings in more than one wall of the class-room, so that the air in them can be freshened at times by cross-currents.

Each class-room has its own entrance lobby and cloak-room, being in fact a kind of separate school. Cloak-rooms should not be less than 7 ft. 6 in. by 13 ft., for forty boys. They would contain for each boy,—in addition to the usual fittings,—a locker to hold a change of clothes, and a coil of hot-water pipes, so that damp clothes might be dried during the school-hours.

The dining-hall, for 200 boys, should be placed so that it may have windows overlooking the river, and have windows also in its north wall. With doors at both ends, only 100 boys need enter and leave by the same entrance. If the use of it as a dining-hall should be abandoned, four special class-rooms, each with the usual lobby and cloak-room, can be formed; or the eastern portion could be used for a smaller number of boys, and class-rooms formed out of the remainder.

The common room for assistant masters has been placed at the south-west angle of the building, so as to obtain cheerful aspects, and to take the utmost advantage of the prospects up and down the river. A top-lighted room, or a room without any look-out, would be most unsatisfactory for this purpose. A disposition to leave the class-rooms, and obtain a glimpse of something outside the school in the intervals, should be encouraged by the position, size, and appearance of the common room.

A large portion of the space under the buildings will form a covered playground, every portion of it well lighted. The open playground occupying the north portion of the site has a total area of 23,000 superficial feet. A covered way, on the east side of the open playground, leads from the covered playground to the latrines, which are placed at the north-east angle of the site.

The building is designed so as to have a well-

marked individual external appearance, and to be fairly dignified, although studiously simple. Red brick, red terra-cotta, and Portland stone would be used for all external faces. The architectural detail in the design bears resemblance to that in use in England at the beginning of the fifteenth century. There are already several other important buildings belonging to the City designed in this style. There would be no attempt to keep in a pedantic spirit to any precedent; but it would not seem inappropriate for the time of the original foundation of the school to be suggested by the general character of the architecture of the building. An existence of 450 years need not be forgotten, because the school will probably be still young at the expiration of a similar period.

It would be uncandid, and mere affectation, for any one at this stage to state, within say 5,000*l.*, the cost of the part of the building which is really essential to the working of the school. An outlay of about 50,000*l.* for buildings, exclusive of school-fittings,—that is, about 75*l.* per boy,—has been contemplated. The raising of the south-east corner, although not essential, would be most desirable on architectural and general grounds. The hotel is very lofty, and the school buildings should overtop it,—if not through the whole of the Embankment façade, at any rate in some decided way in the part immediately adjoining. The wall on the west side of the hotel is ugly and dull, therefore it should be shut out, so as not to be seen over or beyond the school buildings."

Such extracts may serve good purpose, when neatly trimmed down so as to treat only of general considerations, but need not deal with the minuter details, which have such a bad habit,—unless held sternly at arm's length,—of swarming round the gentle reader. Members of building committees, with or without amateur knowledge about drawings and architecture, may, in truth, be excused if at times they are "unable to see the landscape for the trees."

A plain-spoken,—that is, an ungracious,—person might say that the scholar who has the good fortune to be thoroughly trained in such a school, having one of the most valuable sites in London as his playground, having 75*l.* expended for him in building, and a further substantial sum for galleries, desks, and other fittings and furnishing, is evidently the subject of a handsome annual outlay on the part of the general public. By the balance-sheet it appears that salaries cost the City very nearly the total amount received as school-fees for the year, so that it would be necessary to increase the fees from 10*l.* 10*s.* per annum, if there were no endowments, subscriptions, or other funds, to draw upon for pensions, examinations, prizes, exhibitions, repairs, &c., to buildings, and the miscellaneous expenses for "rates, tithes, printing, brooms, winding clocks, sundry wages, &c." After dividing the annual outlay beyond the school-fees by the total number of scholars, it would be possible to represent that the boys' parents are receiving a further pleasant little annuity from neighbours and friends. A more careful analysis of the balance-sheet, and consideration of the whole question, might lead a courageous person to remark that, when any better way of using the surplus cash of past generations can be suggested, it will be possible to give the subject serious consideration. Giving permanence and liberal sustentation to schools, and securing thoroughness in the education in them, may, till then, be looked upon as not the most irrational method of making away with part of the money earned by the present generation, and paid over in order that it may go in directions which a dead hand has pointed out,—by good chance, directions useful to us moderns. But for that to happen we must have wit enough,—to know the main need of our time and of all times, to lay out well the main line of life, and to put capable pointsmen at the switches, encouraging them to take care that the best energies of our people, and the hoarded and still accumulating wealth, are kept on the right track,—not, as the result of neglect or blundering, shunted into the sidings.

Social Science Association.—There were 166 applicants for the office of Assistant-Secretary. A committee appointed to select three and report to the council, named Mr. W. R. Buck, Mr. F. Vincent Budge, and Mr. T. L. Clifford Smith. Ultimately Mr. Clifford Smith was appointed.

PROPOSED "RESTORATION" OF ST. MARK'S, VENICE.

The Society for the Protection of Ancient Buildings have certainly now come in for a *dignus vindice nodus*, if it be true that the reconstruction of the west front of St. Mark's, Venice, has been deliberately determined upon. The building which it is stated is thus threatened is perhaps, all things considered, the most historically interesting building since the Christian era. In it met the poetry of Eastern and of Western architecture; it is the great architectural record of the place once held by Venice, and by Venice alone, among post-Christian cities, as the medium of communication between the political aspirations of Mediæval Europe and the treasuries of "the exhaustless East." In St. Mark's, Oriental magnificence and Western refinement and architectural logic have joined hands. It is the most unique building of Europe; it represents a mingling of architectural splendours and (in a certain sense) incongruities such as we may look for in vain elsewhere. And now we are told that the hand of the restorer is to be wildly lifted up upon this building also.

If this be true, Horace's exclamation "*per fas et nefas*," is the only comment that can be made upon such a piece of Vandalism. And much as we have been disposed to quarrel with and criticise the proceedings of the Society above referred to, we may well say that if such an act of spoliation be really threatened, and if they can show that they are able to do anything effective towards averting it, they will have shown a *raison d'être* more convincing and satisfactory than they have shown as yet. Our hands would be employed willingly to strengthen those of any body of men who were bent on preventing the practical destruction, so far as its antiquarian interest goes, of any part of such a building as the great Venetian basilica,—in comparison with which the architectural and archæological interests of our own cathedrals may almost be called merely local. We are not, however, under the necessity of accepting implicitly the dicta and the information, on such a topic, of the Society for the Protection of Ancient Buildings, and fortunate it is on the whole that we are not. For truth compels us to say, with all due respect for its members individually, that the Society in question has shown such ill-regulated enthusiasms that we could hardly feel called upon to give utterance to any decided opinion based merely on its statements. They seem, in regard to the restoration of buildings, to be among the persons described by Chaucer, "who gladlie deemen to the badder end." No statement in regard to wilful and corrupt Vandalism is too bad for them to swallow; and so far from endeavouring to make allowance for the special circumstances which might seem to give a colour and a reasonable motive to any piece of restoration, their effort has really seemed to be deliberately to shut their eyes to any extenuating circumstances, and to make the very worst of every case, actual or hypothetical, which comes before them.

Fortunately, we have our own sources of information apart from the Society, and, from a letter we print elsewhere, it may be hoped that no such act of wholesale spoliation as the rebuilding or restoration of the front is in contemplation so far. What is proposed to be done, if our correspondent be correct, is a partial restoration or repair on a much smaller scale, and on the ground of alleged decay of the building at the points threatened with renovation. Even this is much to be regretted, and we may hope that any meddling with or modernising of the exterior is in reality unnecessary, and may be averted before it is too late, if not absolutely imperative. Whether the repair, to the extent threatened, is really imperative or not on practical grounds, only a special examination of the present condition of the building could enable one to say positively. From the best information as to its recent state which we have been able to collect, we must candidly say that we doubt the necessity even of the extent of the repair which is talked of, and are disposed to join with the Society in making a determined stand against it, unless its practical necessity is demonstrated beyond possibility of doubt.

The same number of the *Times* which contained mention of the meeting of the Society on this subject contained also a letter from Mr. Wallis, the well-known artist, who of late years has made Venetian subjects among his special studies. His testimony is an independent one, entirely unconnected (ostensibly at least) with that of the Society; and on more grounds than one his opinion is entitled to great weight. But it seems that persons who feel strongly, and on special grounds, on these matters, find it difficult to keep within the line. Mr. Wallis, for example, states that, according to his information, the west front "is to be restored forthwith." Again, he waxes enthusiastic on the beauty of the effect of the undulating surface of the floor in its original state, and says that an eminent English architect has expressed his opinion that the floor was originally and intentionally laid with this undulation of surface, and that the levelling of the floor in relaying the mosaic has been, therefore, an interference with the original design of the architects of the building. However much we sympathise with him in his denunciation of the stupidity with which the mosaic was disturbed without sufficient care being first taken to record and figure the design for relaying, we have not the slightest hesitation in saying that we are convinced that the undulating surface of the floor, about which so much sentiment has been talked, was simply the result of what may be called bad engineering, either in want of skill to keep the true level at the outset, or in want of necessary care to ensure the ground against subsidence from natural causes subsequently. The idea that the floor was intentionally laid out of level, and that this was regarded as a beauty, architecturally or symbolically, by the original builders, we can only deem a chimera of that unreasoning enthusiasm in whose eyes every mistake and every deformity becomes a beauty, provided a sufficiently long pedigree can be made out for it. The varied level of the floor was, no doubt, a curiosity of the building interesting in itself, and which we would not have seen wilfully disturbed. But if repair of the floor were necessary, to have deliberately relaid it out of level would have been an absurdity. It was a piece of clumsiness to begin with, only interesting as a record how clumsy the construction of a building in the Middle Ages could be. By adopting the other hypothesis, Mr. Wallis has much weakened the force of his otherwise valuable letter.

Our conclusion is, that it is a point of wisdom for all who are anxious about the preservation of ancient buildings to temper their enthusiasm by some admixture of practical common sense. The recent movement in regard to the protection of ancient buildings has been so deficient in this quality that it has compelled us, after years of protest on our own account against over-restoration and Vandalism, almost to seem to take the other side, as the side of truth, against the inaccurate and sweeping denunciations now brought against every one who attempts the slightest repair of an old building, even under the most pressing practical need of repair. It may be hoped that what it is proposed to do at St. Mark's does not go much further than what may be fairly called practical repair. If it is found that more than this is intended, our strongest protest will be entered against it, and we will join with the Society for the Protection of Ancient Buildings in demanding that the spoliator should stay his hand. But we cannot help adding that the protest of that society and of artists and others who support it will gain immensely in effect and in usefulness if they measure their expressions carefully, and learn the exact truth of the case before denouncing the parties concerned.

Since these remarks were in type, we have seen a copy of a memorial addressed by the Society to the Minister of Public Works of Italy, and which is about to be forwarded. It has our entire concurrence, and we earnestly trust it will have the desired effect of enlisting the Italian Government on the side of preservation.

It is stated that the Italian Government propose to erect a statue to Victor Emmanuel upon the Piazza San Marco, and for that purpose it is intended to remove one of the magnificent bronze wells which form such conspicuous features in the Piazza.

Sunderland Museum and Library.—These buildings, which have been already described in the *Builder*, were opened on the 6th inst. Messrs. J. & T. Tillman are the architects. We shall give illustrations of the buildings in an early number.

SECTARIAN ARCHITECTURE.

The case of "Botterill and Another v. Whytehead," which was tried at last Leeds assizes, before Lord Justice Bramwell, with the result of a verdict for the plaintiffs, came up again last week before Mr. Justice Hawkins and Baron Huddlestone, in the shape of a motion for a rule for a new trial on the part of the defendant, which the judges ultimately granted.

The case has some significance in reference to the practice of modern church architecture and the attitude of the clergy in relation thereto. The plaintiffs are architects at Hull, and the case, as some of our readers may remember, was an action for libel brought by them against a clergyman who had written to the custodians of Skirlaugh Church, in Yorkshire (the vicar and the squire's steward, to wit), protesting against the employment of the plaintiffs to restore the said church, on the ground that they were Wesleyans, and therefore could not understand the work. In the early days of the Camden Society and the ecclesiological craze such an opinion would have been a matter of course with every sound Churchman. We had hoped that clergymen were becoming a little more philosophical in the matter, and trust that we may, at any rate, regard the reverend defendant in this case as a "survival" rather than as a representative of the feeling of the majority of the clergy who concern themselves with architecture at present.

Whether the charge complained of be in fact libel or not does not so much concern us, and may at any rate be left to the decision of the lawyers. But one or two of the special expressions on the subject which were elicited from one side or the other in the course of its discussion are certainly suggestive of comment. The manner in which the objection to the employment of a Wesleyan architect in the treatment of a church was in the first instance urged by the clerical defendant in the case shows a curious confusion of ideas such as we have not unfrequently observed in relation to this subject. "The restoration of Skirlaugh church has fallen," it was said, "into the hands of an architect who is a Wesleyan, and can have no experience in church work. Can you not do something to avert the irreparable loss which must be caused if any of the masonry of this ancient gem of art is ignorantly tampered with?" Now, in this appeal two issues are raised which are in reality perfectly distinct from one another. The first part of the sentence suggests that the Dissenting architect can have no experience in church work; in other words, cannot have been accustomed to oversee the arrangements and the *appareil* supposed to be specially required in fitting out a building for a specific form of worship. This, though it need not necessarily be true, may very probably be so in many cases. The question so far is one of preparation for a special ritual; and as in the majority of cases the members of a religious community employ an architect of their own community, the probability would be that, as a matter of fact, an architect belonging to another community whose ideas of ritual were considerably different from those of members of the Established Church, might be reasonably supposed to be inadequately informed in regard to the requirements and fancies of the latter. The other half of the sentence introduces another kind of consideration. The fear lest the masonry of "an exquisite gem of art" should be "ignorantly tampered with" introduces the purely architectural side of the question, which is quite another matter. The masonry, in other words the architectural design, of a building, Gothic or Classic, sacred or secular, regarded as a work of art, is a subject the right understanding of which depends purely on architectural ability, and is not concerned with the question of religious creed or ritual at all. It is desirable to take an opportunity of saying this as plainly as possible, because there are still those in high places, architectural and clerical, who are ready to say otherwise, and the most absurd statements have been from time to time publicly made on this head. We remember not so long since an instance, where an eminent architect seriously told those who came to hear from him a lesson on church architecture, that no architect could design a chancel who was not inwardly convinced of the doctrine of the real presence in the Sacrament. This is an example of the length to which a purely ritual and sectarian view of architecture will carry even clever men. Given the conditions under which the ritual is to be performed and the signification attached to it, and the designing of a chancel, more especially when it is a *sine qud non* that it should be a reproduction of an existing architectural style, is a mere matter of archæological and constructional knowledge and of architectural taste and ability. Those who have habituated themselves to regard the subject from the conventional standard of ritualism (not using the word in any opprobrious sense) may have rendered themselves too prejudiced to see this; but it is the natural conclusion of any educated people who look at the matter in an unbiassed frame of mind: and it is not surprising that in the first trial of the case in question the learned judge should have expressed his opinion that "you might just as well say that an architect was not fit to repair or form an opinion upon a Grecian temple because he did not believe in Jupiter and Juno." It would have been more strictly correct, since a Grecian temple was referred to, to say "Zeus and Heré"; but there can be no doubt Lord Justice Bramwell's criticism expresses the common sense of the matter.

The architectural design and *ordonnance* of the Parthenon, the proportion of its parts, the optical corrections of its lines, and all its other beautiful refinements, have no relation of any kind to the character or the worship of Pallas Athené. They are simply artistic refinements which would be of equal importance and interest were the temple dedicated to an Egyptian dog-headed divinity, or to Christian worship of the purest kind. One might say, indeed, in a general way, that the architectural refinements of the building were better bestowed in the latter case, but that is all. *A fortiori*, then, it may be said that a Christian architect of one denomination can find no necessary difficulty in understanding and treating the architecture of a church built for another denomination, so far as we regard it as a work of architecture. Not having much sympathy ourselves with the attitude of the Dissenting mind of England towards æsthetics generally, we yet fail to see any obstacle to the thorough comprehension by a Wesleyan architect of the masonry and structural design of a Mediæval church, or of the style and feeling of its ornament. The objection, so far as we regard the building from an architectural point of view, is, in fact, too absurd to be worth discussion.

There is, however, the ritual point of view. The Churchman holds that there are certain symbolisms in true English ecclesiastical architecture which the Dissenting architect can by no means understand or work out with the proper feeling. We might say, in the first place, that a good deal of this symbolism is more fancy than fact, and that it is engrafted by the modern ecclesiological mind upon the ancient architecture, often on very slight and doubtful grounds. It might be added that the importance thus given to symbolism in church architecture is foolish and out of keeping with modern feeling and modern education, and that a little cold water thrown upon it occasionally would be no bad thing; but this, of course, is begging the question. The fact remains that a number of Churchmen do attach importance to symbolism, and require knowledge of and attention to it at the hands of their church architect. It may, however, surely be said that if the ritual and decorations of Pagan temples can be "got up" and understood by modern Christian architects, it is quite as easy for the Wesleyan architect to understand and to master the ritual requirements of the Established Church service. And, in fact, we more than suspect that these requirements are got up and dealt with successfully by architects who pass, even with the High Church party, for experts in church building, and who really are as far removed from serious interest or conviction in the matter as any Dissenter could be, but who study Church ritual from an æsthetic point of view, in order to meet the demands of people who have good and interesting work to give. These professional men are welcome to the clerical party, while Dissenting architects are not, simply because the former have learned the language and shibboleth of their clients, and can simulate the same feeling in regard to symbolism and ritual, and an acknowledged Dissenter generally cannot. People who have any special views prefer to be served by a man who is one of their own set, and appears to sympathise in their tastes and ends entirely; and that we take to be the whole meaning of the statement that Dissenting architects cannot understand Church architecture.

The actual difference which has existed between the treatment of revived Gothic by Wesleyans and Church-people is, of course, distinguishable, though the two are tending more and more to approach each other.

Dissenting bodies have been slow to take up the architecture which arose in the Mediæval church, and has been revived by the modern Mediæval church; and with a good many of the wealthier Dissenting bodies even now, the preference for Classic architecture has been retained, and their places of worship are distinguished by big columned porticos. The Wesleyan body, much nearer the Church in some of its feelings and traditions than other contemporary sects, was, we believe, the first to adopt the revived Gothic, and thus æsthetically follow in the wake of the Church; but there has generally been a tolerably marked difference between their modern Gothic and the modern Gothic of the ecclesiologists. The Wesleyan Gothic has generally been marked by larger windows, more commodious entrances, and a large roof of one span in place of the three-aisled arrangement. Their chapels have, in fact, shown the attempt to manipulate Gothic architecture so as to adapt it to practical considerations as felt at the present day, in a manner which church architecture of the Establishment certainly has hardly shown at all. Of course this arises partly from the fact that Wesleyanism is confessedly a modern development, and the Church revivalists confessedly look back to precedent. But it seems, when one comes to think of it, rather absurd that Church architects, whose greatest success has lain in accurate copying, should, for that very reason, look down upon Dissenting architects who have, not without success, attempted a new adaptation of the old style. The drawback to Wesleyan Gothic, on the other hand, is, that it has not infrequently shown a want of refinement in detail, perhaps referable to the fact that the set of persons who incline to any of the forms of Dissent in England are usually those in whom the religious feeling is more developed than the æsthetic, and the general taste of such a body is not so refined or exacting as that of the archæological connoisseur. In fact, next to the Roman Catholic, the English Church form of worship in its moderate (not in its *ultra*-ecclesiological) development is probably the most æsthetically-refined form of worship at present existing; and for a considerable period the style of modern English Gothic churches, though very antiquarian and imitative, was certainly a favourable contrast in regard to good taste and refinement of detail to that of most Dissenting buildings. But this has been very much altered of late years, and Dissenting architects have shown themselves as well acquainted with the refinements of Gothic design as any of their brethren of the orthodox pale. Perhaps the clerical defendant in the case which suggested these remarks was old-fashioned in his knowledge, and was unfairly gauging the Wesleyan architect of to-day by the Wesleyan architect of twenty years back, and *hinc illæ lachrymæ*.

THE ART OF THE TURNER.*

It is now some years since we reviewed the first three volumes of a work of which the object is to present a comprehensive and exhaustive survey of a special branch of mechanical engineering. The title, which we have below cited, will be found in the Universal Catalogue of Books on Art, which gives the date 1847-1852 for the publication of the earlier volumes; with the name of C. Holtzapffel as the author. The present author, Mr. John Jacob Holtzapffel (who is master of the Worshipful Company of Turners), is now, as he explains, carrying towards completion a great work commenced by his well-known and highly-gifted father. A portion of a fourth volume was in print at the time of Mr. C. Holtzapffel's death. But on attempting to fill in the outlines laid down on the ground sketch of the book for this fourth volume, the author found that the portion left to his hand would hardly be in harmony with what had already been published. He, therefore, reluctantly cancelled the pages in type; and has

* Turning and Mechanical Manipulation, intended as a work of general reference and practical instruction on the Lathe. Vol. IV. The Principles and Practice of Hand or simple Turning. Illustrated by upwards of 750 woodcuts, drawn on the wood by the Author. By John Jacob Holtzapffel. Published for the Author at 64, Charing-cross, and 127, Long Acre, London. 1879.

the entire responsibility of the work now before us, as to which it is little enough to say that it well fulfils his object of, at the same time, giving elementary instruction, and yet containing sufficiently advanced information to render it acceptable, not only to the amateur, but to the practical engineer.

Considering that more than a quarter of a century has elapsed since the publication of the third volume, and that two more volumes are yet contemplated in order to complete the work, it will be useful to the reader, as well as fair to the authors, to say a few words as to the general design of this series of volumes.

The first of them deals with the materials which the vegetable, the animal, and the mineral kingdoms offer to the workman. The different natures of these materials, the objects to which they are respectively applicable, the structural differences of their physical character, and rules for their choice and preparation, are described. A practical description is given of a variety of processes for preparing, joining, and working these different materials, the general methods here discussed being those which do not require the use of tools with cutting-edges.

In the second volume the principles of construction, the modes of action, and the application of tools used by hand, are investigated, as well as those of machines derived from hand-tools. Chisels and planes, turning-tools, boring-tools, screw-cutting tools, saws, files, shears, and punches are described, as well as the modes of use; and an account is given of various machines in which the hand-processes are more or less closely followed.

The third volume deals with abrasive and miscellaneous processes, which cannot be accomplished with cutting-tools. These processes pass from the rough extreme of grinding to the most delicate finish of polishing. The two actions may be viewed as different applications of a process essentially the same. They are applied both to the production of form and to the embellishment of surface, and include the numerous cases in which, from the nature of the materials operated upon, and other causes, cutting-tools are altogether inapplicable. Varnishing and similar modes of finish are also referred to in this volume.

The fourth volume, which is now before us, was originally designed to contain descriptions of various lathes, and applications of numerous chucks, or apparatus for fixing objects to be wrought in the lathe. Elementary instruction in turning hard and soft woods, ivory, and metal, and also in saw-cutting, follows; with numerous practical examples,—some plain and simple, others difficult and complex,| to show how much may be done with hand-tools alone.

The fifth volume is to treat on the principles and practice of ornamental or complex turning. The use of the slide-rest with fixed tools here comes in. The important features of revolving cutters, used in the sliding-rest with the division-plate and over-head motion, various kinds of eccentric, oval, spherical, right-line, and other chucks; Ibbetson's geometric chuck; the Rose engine, and analagous contrivances, are referred to this portion of the work.

The sixth volume bears the modest title of the principles and practices of amateur mechanical engineering. Some more general and workmanlike adjective may well be substituted for the questionable term "amateur," if this volume prove a worthy complement to its predecessors. Lathes with sliding-rests for metal turning, self-acting and screw-cutting lathes, drilling-machines, planing-engines, key-grooving, slotting and paring machines, wheel-cutting and shaping engines, are here to be described; so that this volume may be expected to be intended to deal with that large and most important section of the appliances of the mechanical engineer on which the work of the inventor may be said to have been generalised. So much thought has been given to the mathematical principles of certain mechanical processes, that the tool reproduces, to a certain extent (as in the calculating-machine), the work of the brain; and the function of the workman is in a great measure reduced to that of tending the tools, driven as they are by steam power.

There is an index of twelve pages to the fourth volume. There is one index in common to the first three volumes; so that every effort has been made to render it as convenient as possible for the purchaser to acquire either the whole, or whichever part may especially interest him, of what will form, when complete, a veritable encyclopædia of the art of the turner.

In the introductory chapter on the principles and practice of hand-turning, Mr. Holtzapffel has not only commenced with that clear elementary statement which is so valuable to the student, but has moreover done so in a manner that will attract the attention of the general reader. The origin of the lathe, which has now become an engine capable of doing almost anything but talk, is no doubt to be traced to the wheel of the potter. The date of that invention, which, however simple in itself, thus contained the germs of the greatest mechanical invention, is as yet unknown. We are made aware, by the occurrence of hand-made and wheel-made pottery in successive deposits, that the art of forming and baking clay was practised, at least among certain tribes, long before they arrived at the use of the potter's wheel. Mr. Holtzapffel cites a passage from Herodotus (book iv., c. 36, Cary's translation), which speaks of the earth as "being made circular as if by a lathe." The reference in the book of Jeremiah (xviii. 3) to the potter who "wrought a work on the wheels," is one of the earliest distinct references to this mode of working that is usually cited. This, however, only takes us back to the commencement of the fifth century, B.C., which corresponds to the first or Archaic period of Greek fictile art, ranging from the commencement of Greek civilisation to B.C. 440. The earliest specimens of Archaic Greek work procured by the British Museum are vases from Athens and Melos. These are not only wheel-made, but are adorned with a variety of geometrical patterns painted in brown on an ash-coloured ground. Considerably earlier than these dates is the reference to the potter in the Book of Job, which is generally regarded as being as old as the fifteenth or sixteenth century before our era. It is true that one passage which may be compared with the formerly-cited allusion by Herodotus as to the succession of day and night (Job xxxviii. 13-15) is obscured by the introduction of the word "seal." No doubt the Hebrew word which concludes the first member of the fourteenth verse has the meaning seal. But "to complete" is another rendering of the root of the word; and in one passage in Leviticus (xv. 3), the expression, rendered by Gesenius "stop his flesh from flowing" hints at a translation more consistent with the idea that a reference is made in the place we have cited to the work of the potter, than with that of the use of an impress, which would require baking in order to be of any permanent value. Neither is the verb translated "It is turned," nor is the context, which refers to the succession of day and night, applicable to the word "seal."

Whatever, then, may be the date of the invention of the lathe, which we take to be, in its essence, a machine which gives motion to the object to be formed; that of its counterpart, the drill, on which the object to be formed is submitted to the action of a revolving tool, is shown by Mr. Holtzapffel to be represented on the walls of an early Egyptian tomb. The dynasty of kings to whose date the representation in question is attributed is not mentioned by Mr. Holtzapffel, nor have we at hand the fine work of Rosellini, "I Monumenti dell' Egitto e della Nubia," from which it is copied. But the unchanged forms of the hieroglyphics, as far back as they have yet been traced, and the sharp, perpendicular edges with which they are engraved on the serpentine and basalt of sarcophagi and statues, are mute witnesses of the use of the drill at a period of from 5,000 to 6,000 years ago, at the very least. We have a shadowy recollection, moreover, of an Egyptian representation of the potter's wheel; but now only indicate this part of the inquiry as one that will reward more minute investigation.

"The symmetrical beauty," says our author, "and necessity of the cylindrical form for the wants of mankind, in an endless variety of utensils and implements, the daily requisites of civilisation, in the construction of the tools and machines for manufactures, locomotion, and the spread of knowledge, are, it is submitted, too apparent to demand more than mere allusion, even in a volume devoted to its production in the practice of turning." It is to the desire to imitate natural objects, such as reeds and canes, globular fruit, eggs, pebbles, shells, and animal structures, that Mr. Holtzapffel seems inclined to attribute the origin of the lathe. With all due deference to an hereditary authority on the subject, we are more inclined to think that it was from a more practical application of skill that this grand appliance first arose. To roll a leaf, or a plastic substance of any kind, between the fingers; to roll a log, by the use of rude levers, over the ground; to apply a rough rolling-pin to form dough into cakes; to give revolution to a stick between the hands in order to produce fire by the friction of its point; were all so many natural steps towards the origination of the drill and of the lathe. And, as before hinted, it was the introduction of an axle in a wheel, whether used for the purpose of transport, or for those of manufacture, that did for the art of the turner what the thought and insight of Watt did, so many centuries later, for the steam engine.

Mr. Holtzapffel gives admirable sketches not only of Egyptian and Chinese drills, of extreme antiquity, but also of Indian, Persian, Arabian, and Chinese lathes. Notwithstanding the antiquity which is shown by the occurrence of this appliance amongst so unchanging a people as the Chinese, the oldest representation with which Mr. Holtzapffel is acquainted of that early form of the machine which is known as the pole-lathe, in Europe, is taken from a wood-cut (reproduced in the volume before us) in the "Panoplia Omnium," a rare old book by Hartman Schopper, published at Frankfort-on-the-Maine in 1568. This valuable work contains 154 engravings of different trades, each accompanied by descriptive Latin verses. *Tornarius*, the turner, thus advises his readers,—

> "Sedulus e flava tornarius omnia buxo,
> Torno mee torno quicquid habere voles."

Boxes, balls, and tops are enumerated in the following lines as the articles thus formed at will from yellow boxwood.

The European form of lathe is considered by Mr. Holtzapffel to owe its special character to the Western habit of standing, rather than sitting to work. Hence the centres (which in the Indian lathe are simply round nails or spikes, driven into short posts, wedged into the ground, at a height of about 8 in. above the soil) are raised to a convenient height, and means are adopted of giving solidity to the framework. Instead of the bow, which, applied first to the drill, was next employed to give a reciprocating revolution to the object to be wrought, an elastic pole was introduced above the lathe. To that was attached one end of a string or cord, which passed round the axis of the rotary part of the lathe, and was then attached to a stirrup or to a treadle-board. By this contrivance the foot, which the Indian turner employed to steady the cutting-tool, was used as the motor power; and both hands of the workman were set at liberty for the management of his cutting-tool. The disadvantage of this kind of lathe (which still retains its place in not a few country workshops in our own day), is that half the time, and half the power, of the workman are lost. The tool only cuts while the work is turning *towards* its edge, and the return of the pole, and the backward spin of the work, involves as much loss of time and unavoidable waste as does the journey of the coal-wagons on our railways in which they have to return empty to the collieries.

A considerable improvement on the pole-lathe is figured, the cut being taken from a work published in Lyons in 1701, entitled "L'Art de Tourneur; ou de faire en Perfection toutes Sortes d'Ouvrages au Tour. Par le R. Père Charles Plumier, Religieux Mineur." This is the introduction of a spring, or archery-bow, instead of the pole. This method, while giving increased power and regularity to the movement, does not, however, avoid the inconvenience of reciprocating action. The use of continuous motion, the lathe being driven by means of a wheel, is first represented in Schopper's book, dated in 1568. He there exhibits a detached wheel used by the turner of pewter tankards, who is working at a centre-lathe set in motion by a fly-wheel turned by a second person. In 1816 a hand-driving wheel is engraved in the "Manuel du Tourneur." The combination of the treadle and the fly-wheel, by means of which the workman can produce continuous rotary motion by the action of his own foot, was first applied to the grindstone and to the wheel of the gem-engraver. These are figured by Felibien, among whose numerous works one, entitled "Des Principes de l'Architecture, de la Sculpture, de la Peinture, et des autres Arts qui en dependent; avec un Dictionnaire des Termes propres à Chacune de ces Arts," was published in Paris in 1676, and again in 1690, 1697, and 1699.

Having arrived thus far in the history of the lathe, Mr. Holtzapffel proceeds exhaustively to discuss the momentum of the driving-wheel, and

the varieties of hand fly-wheels. The hand-wheel, he points out, receives two impulses during each revolution; the foot-wheel only one; so that, in order to obtain equal momentum, the latter requires to be made to move at at least double the speed necessary for the former. As a speed pulley, the fly-wheel converts the velocity most easily obtained by the operator into that called for by the nature of his work, by having a series of steps or grooves of different diameters, both in the fly-wheel and in the pulley which is driven from it. Thus, when the diameters are equal, the wheel and the mandrel of the lathe move turn for turn; and the speed gained by changing the grooves is inversely as the diameters of the pair of drums. The speed employed in turning the soft woods can hardly be too high. But for ivory, hard wood, and metal, a gradually decreasing rate of motion is required, coming down, in some cases, in power lathes, to the slow rate of from 10 ft. to 15 ft. per minute, measured at the tool.

The turn-bench, which is the smallest of all turning apparatus, is found in the hands of the watch and clock maker, with whom the bow lathe has never yet been entirely superseded; and it is extremely well adapted to his requirements. One of these little conveniences, only 9 in. in length, is figured at p. 26. When provided, as shown at p. 43, with a small hand-wheel of from 10 in. to 18 in. in diameter, this becomes the clock-maker's *throw*, or dead-centre lathe. The wheel is turned with the left hand, and the tool held in the right. From its simplicity and efficiency, this was long a favourite appliance of the millwright. When now employed it usually carries a pulley, and is driven by power.

The cranks and treadles of foot-lathes are next described by Mr. Holtzapffel, and this section is followed by another on driving lines and bands, splicing, and couplers. As an instance of the practical value of the book, we here call attention to the set of figures showing the mode in which to splice catgut, as well as to the cuts of the hooks and eyes for joining bands (at p. 54).

We now arrive at the subject of lathes with the revolving mandrels, and at a portion of the book which enters into a full and illustrated detail of the subject, which it would occupy too much space to attempt to follow. It would be worth Mr. Holtzapffel's attention, in subsequent editions of what will no doubt form the standard text-book on the turner's art, to insert a short glossary of technical terms. Thus when he tells us that the lathe in which the work alone revolved between fixed center-points, —he uses the American mode of spelling centre, —received its greatest improvement in the introduction of the mandrel, it would be well to say what is the exact meaning of that term. According to the "Practical Dictionary of Mechanics,"—formerly reviewed by us,—a mandrel (which the editor tells us carefully to distinguish from "a mandril, a short-tailed baboon with a red and blue face") is an arbor or axis on which work is temporarily placed to be turned. An arbor, according to the same authority, is an axle or spindle of a wheel or pinion, or, a mandrel on which a ring, wheel, or collar is turned in a lathe. These quotations, though throwing some light on the use of the word, by no means detract from the force of what we have said as to the importance of defining any technical word in a book like that under notice. We have to come back to Johnson's definition, "mandrel, instrument to hold in a lathe the substance to be turned." "Arbor" is not in the edition of the dictionary at hand.

Chapter IV. deals with modern foot-lathes; first those with plain or back-centre mandrels; secondly, with traversing or screw-cutting mandrels; third, the slide foot-lathe. Chapter V. introduces us to apparatus added to the lathe for specific purposes. Such are the division-plate and index, scribing tools, boring collars, sliding guides, and back-stays, and the slide-rest, with the appropriate tools. The spiral apparatus and lifting-blocks and lengthening-bearers are also described in this chapter. Chapter VI. is on chucks and apparatus for fixing the various works in the lathe. Here, again, while chucks for different purposes are described, we should have liked to see the chapter commence with a definition of the word. Our American friend defines "chuck" as "an appendage to a lathe; being screwed on to the nose of the mandrel it is made to grasp the work to be turned." The "Classified and Descriptive Index" of the fixing chucks and apparatus only needs here a line or two of introduction to be complete. The full and exhaustive chapter thus commencing completes that portion of the work which is directly descriptive of the lathe, its parts, and its appliances.

Chapter VII. is on the elementary practice of soft-wood turning. It contains information of the highest value to the amateur, or to any one who is not regularly apprenticed to the craft of the turner. It commences by describing the position to be taken by the workman, the velocity he should give to his work, the position of the external tools, and the use of the callipers; the position of the gouge and chisel on the surface, back surface, the plank-way surface, and on the cone; the internal cylinder, boring, internal soft-woodtools, hollowing with the gouge, hook and side tools, and the internal surfaces. Last come directions for turning the sphere and the internal hemisphere.

Chapter VIII. is on the elementary practice of hard-wood and ivory turning, which is divided into five sections, corresponding, *mutatis mutandis*, with those of the last chapters. Chapter IX, on the same principle, deals with elementary metal-turning. Chapter X. is on screw-cutting. Chapter XI., an extremely suggestive one, is on the sphere, and various forms in hard wood and ivory derived from that solid. Here will be found, reduced to rule and to compass, the whole mystery of the Chinese ball, consisting of several thin spherical shells, one within another, pierced with holes, and containing a solid ball in the centre. Solids within the sphere, moreover, are produced by the lathe with magical effect; the sharp conical points of the inner figures projecting like the quills of the porcupine from the containing shell.

Chapter XII. contains practical examples of simple plain turning in wood and ivory; Chapter XIII., practical examples of combined plain turning, executed with the hand-tools alone; and Chapter XIV., miscellaneous plain turning in wood and ivory, dyeing, staining, and darkening. There are twenty-two full-page illustrations. Two of these give details of that beautiful pierced work for the Arabian lattice-window which often occupies the place of glass in the East. Most of others are drawings of vases, candelabra, and other objects, produced by the lathe. As to this part of the work, we wish to call attention to the superior elegance of the forms taken from Etruscan vases, to which we may, perhaps, add, the Pompeiian tripod (fig. 748) over some, which, like 732, 747, 707, 679, and especially 681, seem to have been fitted together impromptu, in the way of puzzle. And if we have anything to add by way of reserve to our commendation of a work that is worthy of the eminently workmanlike name that it bears on its title-page, it is that the turner, whether amateur or otherwise, cannot be too scrupulously and minutely exact in the measurement and reproduction of those inimitable proportions (inimitable in any other way) which were attained by the imagination of the artists of Greece in the noblest period of art.

CAN THESE DRY BONES LIVE?

THERE was a time, not many years ago, when the Society of Antiquaries represented, fairly enough, the antiquaries and antiquarianism of England. All the Jonathan Oldbucks and Dryasdusts of the day were inscribed upon its rolls, and such of their papers as escaped the limbo of the *Gentleman's Magazine* were included in its Transactions. On the general character of those Transactions, tried by the standard of the present day, it were ungracious to dwell. Much there is of useless and misapplied erudition, as in the papers of King, much of speculation very wanting in common sense, a certain amount of description of royal tombs, opening of barrows, clearing out of Roman buildings, and many prints of wills, household books, and Mediæval accounts of expenses, possessing a good deal of interest. The age was not particularly favourable to critical inquiry, and the contents of the *Archæologia* were not in advance of the age.

With the second quarter of the present century the race of "virtuosi" passed away, and a new school, assuming the title of archæologists, took their place. The "dignity of history" no longer prevented an historian from attending to the material evidence afforded by topography. Men who wrote of a great battle became careful to visit the spot on which it occurred, and to investigate the local evidence; and topography, which was studied by Arnold, and much attended to by Macaulay, in the hands of Freeman took up its true position as the handmaid of history. In archæological matters, and especially in the study of ancient buildings, men no longer sought evidence only in written records, usually imperfect, but they studied the details of the buildings themselves; and in this way, under the leading of Rickman and Willis, the dates of the several parts of our cathedrals, churches, and castles have been laid down with considerable accuracy. A central society, branching speedily into two, gave birth to two series of Transactions, and these volumes, with those of the Cambrian Society in Wales, above a hundred in number, contain an immense mass of information relating to the antiquities of the country, and much of it,—as, for example, the papers of Dr. Guest,—of a really critical character, such as no modern historian of any early period of English history could afford to neglect. Since the birth of these three societies,—the Archæological Association, the Archæological Institute, and the Cambrian Association,—a number of county societies have sprung up, all of which are vigorous and well supported, and almost all publish annually a volume of Transactions, full of excellent local matter, rendering the task of future county historians much less laborious than heretofore, and much augmenting their probable accuracy.

But, strange to say, in all this renewed life and vigour, the Society of Antiquaries, the chief official and only chartered representative of English archæology, has taken no share. She has never moved a step towards the recognising of these new societies, still less has she attempted to modify her charter so as to allow, in some shape or other, of their affiliation. Her Transactions have preserved much of their ancient character; they are highly respectable, and now and then contain papers of great merit, but the excessive delay that has of late years characterised their appearance has prevented some of the best known of modern archæologists from using them as a channel of publication. Thus, the conduct of the society has at this time entirely destroyed her claim to represent the archæologists of England, many of whom are not included in her rolls, and but few contribute to her Transactions. Not that there is any open breach between her and her rivals. They feel no hostility towards her. They have, indeed, no reason to be jealous of her fame, and most of them would be very glad indeed to co-operate with her for any useful purpose. There are certain general questions on which the great English Society should have expressed sound opinions. Such are the remains, material and philological, of the Britons in England; the traces of the Roman sway; the monuments, military, ecclesiastical, or literary, of the English before the Norman Conquest; the architecture, ecclesiastical or military, of the centuries ending with the decline of the Perpendicular style. Upon these and many other branches of archæology the pages of the *Archæologia* ought to contain papers of an authoritative character, but neither in them nor in the annual address of the several presidents do we find, with some exceptions, any considerable contribution to our archæological knowledge. The Society has for years been asleep. No doubt the slumbers have been decorous, but they have been profound, and none can say that the Society has, for a long time past, exercised any important influence on English archæology, or that its Transactions have held any very high position in the archæological literature of Europe.

The recent election of the Earl of Caernarvon to the office of President has led many of the Society's well-wishers to believe in a possible reform, and his lordship's opening address on his occupation of the chair justifies and encourages this belief. Lord Caernarvon, though not an archæologist, is a man of cultivated mind, as well as a man of business and of the world, and his address, though, as became the circumstances, of a modest and moderate character, showed that he was well aware of the short-comings of the Society, and thoroughly determined to do what in him lay to apply a remedy.

Lord Caernarvon's recommendations are:—

1. The creation of certain travelling studentships for the purpose of archæological study.

2. An archæological survey of England in connexion with the Ordnance togographical survey.

3. A national Codex Diplomaticus, or collection of charters.

4. A new edition of Dugdale's "Monasticon."

5. The publication of the Pipe Rolls.

6. The publication of the Subsidy Rolls.

7. The publication of the episcopal registers.

The travelling studentships are scarcely likely to be founded by the Society, and may therefore be set aside for the present with the remark that the Ratcliffe travelling fellowships, to which they would be somewhat analogous, can scarcely be said to have fulfilled the special intentions of the founder.

An archæological survey of England and Wales would be a most valuable work, conducted, as it would necessarily be, upon the plan of that commenced and unwisely laid aside in Ireland. The Ordnance surveyors, indeed, thoroughly understanding their proper business, are not archæologists, and would need at first to be aided by some competent adviser. At present the lettering of the objects of antiquity on the maps is defective, and many important earthworks are overlooked and their form misapprehended; but with a little instruction and continued practice in the field, the officers of the survey would soon become excellent archæological observers, and as regards earthworks, concerning which but little is accurately recorded, a very perfect and well-classified list would speedily be obtained. Local names also, especially of fields and small enclosures, now neglected, would be recorded and indexed, and in this way much curious local history would be recovered and verified. This, however, is not a work for the Society to undertake. It belongs exclusively to the Government, and all that the Society could do, and it is much, would be to prepare a sketch of what is wanted, and to press its adoption upon Government, as well as upon the War or Ordnance authorities.

A Codex Diplomaticus, or collection of the charters and similar instruments from the Saxon times to the accession of the House of Tudor, would indeed be a great and useful work, and one which would be undertaken under many advantages at this time, when the labours of the Historical Commission have brought to light so many private papers. No work would do so much for the elucidation of the pedigrees of the owners of land, or for the descent of their property. This, moreover, is a work which could be undertaken under the direct management of the Society. The Record Office and the British Museum are open to all, and the university, corporate, and private collections would certainly not be denied to the Society. Of course a work of this nature should be published by subscription, and its parts worked concurrently by several editors. After the eleventh century, the work should be divided under counties, which would add to its value as a book of reference, and greatly add to the number of its supporters. Such a work, accompanied by correct indexes of the names of the witnesses, would lead necessarily to a new edition of Dugdale's "Baronage."

A new edition of the "Monasticon" would be a formidable, but a very possible undertaking. Since the last edition many monastic cartularies have been discovered, and the means of correcting the lists of abbots. Ground plans of the several abbeys are much needed, with scientific descriptions of the architectural peculiarities and style. The "Monasticon" is, however, a national work, and all the Society could do would be to insist upon the importance of the undertaking. This work also, if properly completed and indexed, would be of great use in the preparation of a new edition of the "Baronage."

Lord Caernarvon places the publication of the Pipe Rolls fifth upon his list of the more pressing demands upon the society. We should be disposed to place it in the first rank. The great Rolls of the Exchequer, known familiarly as the Pipe Rolls, are the earliest records now unprinted, and by far the most complete. With the exception of two years, for which the rolls are lost, but of one of which there exists a duplicate, they consist of a series of annual rolls from the second year of Henry II. They are the accounts of the royal revenue rendered by the sheriffs of counties, custodians of honours and baronies, and other fiscal servants of the Crown. They show, not only the sources of the revenue, with great minuteness, but with equal minuteness the payments from the same, comprising allowances for the repairs and rebuilding of the royal palaces, hunting-lodges, and castles, wages for soldiers, keepers of the royal houses, and servants of the Crown, down to occasional messengers. They throw much light upon the movements of the sovereigns, upon many important public transactions, upon the prices of labour and commodities, and thus upon many constitutional and social questions in English history. They throw a curious light upon the tastes and habits of the several kings. They record payments for books, for paintings, for dogs, horses, and falcons, payments to the justices, continual references to the great tenants of the Crown, and the rents and extent of the Honours, of which so little is now known. Madox, the highest authority of his own or any other day on the records of the realm, placed the Pipe Rolls second only to Domesday in value. The Pipe Rolls, therefore, ought to be made public without delay, but this is a work for the nation, not for a society. The Master of the Rolls should be moved at once and with energy, and with all the pressure that the Society can exert, to direct this great work to be entered upon. It is for him, or rather for his editors, to decide what form the publication should take, to what extent mere formal and continually repeated matter may be omitted, and how far glossaries are necessary. The present Master of the Rolls is supposed not to take the same keen interest in the publication of his treasures as was the case with his predecessors, Lords Langdale and Romilly, and questions of economy are said to weigh with him rather unduly. It may be, therefore, that if the Society of Antiquaries exerted itself to obtain subscription lists for a proposed publication, the Master would be found more willing to commence it. This, however, is for the Society to consider.

The Subsidy Rolls, though inferior to the Pipe, are of great value, and being a part of the records of the realm, ought to be published by the nation, and the same may be said of "Kirby's Quest." Here, possibly, pressure, especially if combined with pecuniary assistance, might be used with advantage.

The episcopal registers are very ancient records, and but little known. They not only contain the names of early incumbents in each diocese, but those at Lambeth not unfrequently give the names of incumbents in distant parts of the provinces, where the benefices, either by lapse or as options, have been presented to by the archbishop. These records, like the wills and testaments, are but little known, and for the same reason. Some were ill-cared for, ill-preserved, and very inaccessible. There was among the episcopal registrars, as in Doctors' Commons, great jealousy of those not on the staff of the registry, and all sorts of foolish precautions were taken to exclude inquirers, whether for legal or merely antiquarian objects. The interference of the Legislature has much altered these conditions, and although there are still difficulties in the way, amounting in some cases almost to a prohibition, these are merely the remains of an obsolete system of exclusion, and there would now be no objection taken by the chief custodians of these documents, whether episcopal or lay, to their publication.

It is a work the Society of Antiquaries might very properly undertake. The registers of each diocese should be edited and printed as a separate volume; and, if so sold, would no doubt be largely subscribed for in the district.

Thus, to recapitulate, the scheme for fellowships might be laid aside.

The Archæological Survey of England should be pressed upon the notice of the Government.

A new edition of the Monasticon, and the publication of the Pipe and Subsidy Rolls, should be urged upon the notice of the Master of the Rolls with or without a list of subscribers to the several works.

The publication and editing of the Codex and of Episcopal registers might be undertaken by the Society alone.

But if any, or even one, of these great and useful works are to be taken up by the Society of Antiquaries, that learned but tardigrade body must show more signs of vigorous life than it has hitherto done. First of all, its own Transactions should not be suffered to fall into arrear. It should also take some steps to acknowledge the various independent societies throughout the kingdom, and to admit their members to some sort of qualified fellowship. If Lord Caernarvon were really himself to take the lead in these matters, perhaps to take office in some of the attendant societies, and, as president of the great society, honour some of the local annual meetings with his presence, it would show that the central and chartered society was in earnest, and would pave the way for a general and liberal support to any well-considered schemes of publication that might be brought forward.

ANTIQUITATIS INDAGATOR.

FROM THE BANKS OF THE SEINE.

It is with regret that we have again to open our chronicle from the banks of the Seine with a reference to the strike which still continues to disturb the building trade. Again we have only to record that the situation cannot be said to have materially changed, though further mutual concessions have been made. In the course of one of the numerous meetings held lately by the men, one speaker, amidst the general hilarity of the assembly, made known the reports that circulate with regard to the origin of the funds that sustain the strike. Every conceivable hypothesis has been suggested; the Pope and the ex-Empress having been stated to be large donors; finally, the news has come that the goodly sum of 12,000*l.* has been sent from England by the English workmen to their Parisian brethren.

One of the most important industries of Paris, that of the bronze-founders, has within the last week had to suffer from the inconveniences of a strike. This action causes much disturbance, as the trade has been suffering greatly this year. In addition, foreign competition, which has already closed the foreign markets to the French, will receive a further impetus by this check to an industry in which Paris at one time had no rival. Much as it may be regretted that the trade has received so heavy a blow, from an artistic point of view, France deserves but small credit for the cargoes of worthless, tasteless trash she has exported to every mantelpiece and over-dressed *café* of the world, civilised and uncivilised.

While Paris is still suffering from one of the many counter-effects of last year's world's show, from the banks of the now almost lifeless Seine we learn that the rival "in small" of Paris, Brussels, is rapidly pushing forward her preparations for next year's national Exhibition. We are not again to be tired by a huge international show: Belgium and her history, past and present, and the art and industry of her active provinces, will supply ample food for study. Of all the countries of Europe the industries of few, perhaps, excepting Holland, and, of course, from the same reasons, Switzerland, are so little known as those of Belgium. Prosperity and plenty are enjoyed by the Belgians, the population of whose busy provinces barely surpasses that of London. We may look forward with pleasure to the show next year in the gay little capital, when we hope that Belgium may become better known to the rest of the world. In size we are not, fortunately, to have a huge palace: the two pavilions of the Exhibition, one of which is already covered, present a superficies of some 7,200 yards. The executive bureau of the Exhibition originally decided to exclude all exhibits from abroad. But now exception has been made in the case of those foreign products which constitute the raw material of any industry exercised in the country.

Within the last week an interesting competition has been contested at the École des Beaux-Arts; it is the first time that the so-called "Concours des Gobelins" (the design for a piece of tapestry to be reproduced by the Government factory of that name) has taken place. There are to be two trials; and a few days since the first competition was decided. The definite judgment is to be given on a second trial. The object of the competition this year is the model of a piece of tapestry with a border destined for the room of the Bibliothèque Nationale, which still retains the name of the former owner of the old building, Cardinal Mazarin. The tapestry is to represent "the genius of letters, science, and the arts in antiquity"; it is to be about 22 ft. or 23 ft. broad, and about 15 ft. high. Of the numerous sketches exhibited it was certainly curious to observe how few of their designers had attended to even the most elementary rules required in the design of such work; but we heartily approve of the choice of the jury in the sketch No. 22, in which the great men of antiquity are skilfully and intelligently grouped according to the more or less conventional rules which should always regulate the design of tapestry. It is difficult to understand our inability to produce works of art in the same material in which were worked such marvels in the past, but the French Government certainly spares no pains to foster the interesting traditions of this once great branch of art. It is to be regretted that, in England, our South Kensington Museum authorities do not adopt some analogous method, for no more

noble decoration can be imagined for the walls of our great buildings than fine pieces of tapestry. Why should not the bare walls of the Albert Hall,—particularly those two great glaring patches on each side of the organ,—be decorated with allegorical pieces of tapestry? Let them first be old pieces till the school of art has produced others to replace them; and let those who doubt the efficacy of the effect of such decorations in a vast hall, visit the (now alas! deserted) Chamber of Deputies at Versailles, where on the walls at each side of the tribune hang (certainly hung a few weeks since) two superb pieces of Louis Quatorze tapestry,—probably designed by old Sebastian Leclerc or Lebrun,—and lighting up with their sober brightness the whole interior of the vast chamber. We strongly suspect that if a diligent hunt were made among the storehouses and lumber-rooms of our palaces, some gorgeous treasures from the looms of Flanders, France, and the East would not fail to be brought to light.

Speaking of exhibitions and treasures hidden away, we may mention that at the present moment the French Government is actively employed in re-organising its Colonial Museum, which, in due course of time, will be opened at the Palais de l'Industrie, that most useful of all the permanent buildings in Paris. At a time when our own India Museum is about to be "broken up," is it not somewhat surprising that we who possess, of all the countries of the world, the largest number of colonies, can boast of no Colonial Museum? The short space of a paragraph is scarcely calculated for the discussion of such a deficiency; but does it not appear somewhat to be regretted that our Consular agents, and even our missionaries, are so neglectful? The time is rapidly approaching, if it has not already come, when the "blessings of civilisation" will have exercised their invariable influence on formerly untouched portions of the globe, and before long it will be impossible for us to restore the past of those countries the Anglo-Saxon race so actively colonises. At the Invalides there is an interesting collection of ethnographical models, dressed correctly, and representing the inhabitants of the most distant parts of the globe; and no more instructive Sunday afternoon can be passed than in this collection, which forms so marked a contrast to the splendour of the armour and the artillery and war material of the rest of the famous museum. Why have we not in England some such collection? The idea may seem easy to suggest, but it cannot fail to have struck more than one intelligent British representative abroad, placed in a peculiarly advantageous position for acquiring every information on the subject, only that public acknowledgment has been wanting. Such a collection might easily be formed by loans, for private individuals who return from the colonies rarely fail to bring back some memento; and it may be observed that such a museum need not be made a permanent attraction in the metropolis: the provincial towns would probably derive more benefit from its teachings than the busy and over-occupied capital.

Irreverent as the objection may seem, on reading in a recent number of the *Builder* an account of the interesting abbey of Monte Cassino and its far-famed library, the recollection suggested itself to us of a visit once paid to the house of St. Benedict by no less a classic scholar than Boccaccio, who has told us how, being in Puglia, he determined to visit the monastery of Monte Cassino. Arrived at the hospitable gate, he desired to see the library, of the rarity and wealth of which he had so often heard. He found, to his surprise, the place without a key or even a door; the grass grew on the window-sills; the books lay thick with undisturbed dust. He examined several volumes, and, to his bibliopolic horror, found a large number of pages wanting; in other cases the margins had been cut out: almost every book had been mutilated. Having asked a monk the cause of this extraordinary neglect, he was informed that from time to time the monks, wishing to make a few *baiocchi*, scraped clean a number of manuscript pages, and made of them little psalters, which they sold to the children; as for the margins, they made them into little books of piety and prayer for the women. The monks, who pass for having preserved the works of the Pagan writers of antiquity, cannot be said to have always played the part of zealous propagators of the light of learning.

How few of the many who visited, on the "Jour des Morts," the little and already too-crowded cemetery of Auteuil were aware, as they passed the more than usually well-designed tomb of poor Cockerell, with its three perfectly-fresh wreaths, placed there by loving friends on their way through Paris, that beneath the well-wrought stonework rests an artist whose life, notwithstanding the worldly exertions of an artificial society, was devoted to the realisation of the most accomplished ideal? Poor Cockerell, who died just one year since here in Paris, will live in the esteem of his friends, and his early death will sadden their recollections of the past, which, during his short life, he in so many ways enlivened.

Although not even Mr. Ruskin,—an honorary if not a sufficiently honoured member of the Venetian Academy of the Belle Arti,—has said, or can say, too much in deprecation of the restorations that have injured in his time the "stones of Venice," the fear that is just now distressing the artistic world, that the west end of the famous church of St. Mark is about to be altogether destroyed, is somewhat, like most sad news from a distance, exaggerated,—exaggerated not only by those who still hope to see Venice for the first time in its undisturbed ruin, but by others who are lately, like ourselves, fresh from the lagoons and the Piazetta. It will be a long time before the Venetians in authority will have at their command sufficient pecuniary means to do wholesale injury to their unique place of attraction and worship, and from what we have lately seen at St. Mark's, the only immediate danger to be apprehended, and in all conscience it is serious enough, is an injury at the west angle equal only to what has been done to the corner overlooking the column of red porphyry (the *Pietra del Bando*) at the entrance of the Ducal Palace by the Giant's Staircase. This corner, as it existed, and had done for centuries, may be seen represented with all the care and truth of a thoroughly obedient artist in one of the most beautiful of old Samuel Prout's Italian drawings. Something probably must be done to support and maintain stones which are proved to be in actual danger of falling, but anything more than this should be prohibited.

A NOTE FROM FLORENCE.

Up to now the mode of finishing the façade of the Duomo has not been decided on. The work executed is excellent; I have mounted up on the scaffolding and examined it,—work such as Italians, long used to work in marble, only can do. Of course De Fabris, the architect, has legions of opposers, and decidedly, had he persisted in his first design of the three, "Cuspodi," the whole must have been a failure.

Among the few bits of news current it may be mentioned that the Exposition of old Tuscan art, promised to be opened this November, is, for want of means, to be postponed till next year. It appears that it would be a private speculation of Marchese Torrigiani. Probably energy and activity are more wanting than means.

Another Martha Somerville died here on the 3rd, the last of the family of the eminent Mrs. Somerville. Her death resulted from internal cancer. She was a lively, clever, amiable woman, and, though not young, retained a handsome face and splendid fair hair to the last.

The new Jewish Synagogue here is fast approaching completion. The interior walls are being gorgeously decorated, looking as if heaps of Indian shawls were covering them, with a lavish addition of gold. All the wealth of Florence is in the hands of the Jews. The old nobility, from the division of the family property among the members of the family, are becoming poorer and poorer, selling their heirlooms, some even the archives of the family. The young members do nothing. No one under thirty can be a "deputato," and there remains only the army or nothing, or rather the army or gambling.

Florence is trying to show some manufacturing spirit. Two rich old citizens have begun a crystal manufactory, and there are no fewer than four different majolica manufactories. The strangers are flocking in. Florence may, perhaps, profit by Rome's misfortune, fever having prevailed there this summer to a greater extent than has been known for many years.

The Senator Boccardo, in one of his writings, proves, with the indisputable logic of figures, that while in Italy the power of the sun and soil is greater than elsewhere, the productions of the soil are scarcer, through the negligence of the people. In fact, whilst, in general, a hectare of land in Italy produces 10 or 11 hectolitres of grain; a hectare of French soil will produce 15; of Belgian soil, 20; of German, 26; and in England not less than 32. England, then, not Italy, merits to be proclaimed the *alma parens frugum*.

And what is cited of wheat or bread may be said of wine. Thus, while in France, which has a superficial area of wine-growing land so much inferior to Italy, 63 million hectolitres of wine are produced annually, Italy, with the fine climate and rich hill country, only produces 27. It is only within the last few years in some of the provinces of Tuscany and Piedmont that the serious study of cultivating the vine and the making of wine has been attended to. No wonder, then, that while the Society of Mutual Help in France has already accumulated a patrimony of 70 millions, and in England more than 250; in Italy they have not been able to reach 10 millions.

HEALTH AT HOME.*

The old saying, there is no place like home, has a singularly happy meaning when it is applied to health and the benefits which spring from health that is good and beautiful. We who are engaged in forwarding sanitary work may labour our lives out and still do little service until we can get each home, however small it may be, included in the plan of our work. The river of national health must rise from the homes of the nation. Then it will be a great river on which every blessing will be borne.

The placard calling together this meeting specially invites ladies,—I had rather it had said women,—to be present. It is worded in this fashion, because we who have invited know that women are always at home as men are always abroad, and that the woman who is at home must be the continuous and natural guardian or ward of the health that should centre in the home. When I, as a physician, enter a house where there is contagious disease, my first duty is to look at the surroundings. What are the customs of the people there?—are they wholesome, are they unwholesome? If the answer be "wholesome and common-sense," then I know that the better half of success in the way of treatment and prevention is secured. If the answer be "unwholesome, slovenly, disorderly, careless," then I know that all that may be advised for the best will be more than half useless, because there is no habit on which any dependence can be truthfully placed, and because habit in the wrong direction is so difficult to move that not even the strongest ties of affection are a match for it in times of emergency. If we could, then, get wives and mothers to learn the habitual practice of all that tends to health, we should soon have an easy victory, and should ourselves cease to be known as the pioneers of sanitary work, the work itself being a recognised system and a recognised necessity practised by everybody.

In the few minutes at my disposal let me try and tell you what, after many years of experience and observation, seem to me to be a few golden rules for securing health at home.

1. *Sunlight at Home.*

1. Whether your home be large or small, give it light. There is no house so likely to be unhealthy as a dark and gloomy house. In a dark and gloomy house you can never see the dirt that pollutes it. Dirt accumulates on dirt, and the mind soon learns to apologise for this condition because the gloom conceals it. "It is no credit to be clean in this hole of a place" is soon the sort of idea that the housewife gets into her mind; "the place is always dingy, do what you may," is another similar and common idea; and so in a dark house unwholesome things get stowed away and forgotten, and the air becomes impure, and when the air becomes impure the digestive organs become imperfect in action, and soon there is some shade of bad health engendered in those persons who live in that dark house. Flowers would not healthily bloom in such a house, and flowers are, as a rule, good indexes. You put the flowers in your windows that they may see the light. Are not your children worth many flowers? They are

* By Dr. Richardson, F.R.S. Read at the Croydon Sanitary Congress; closing meeting.

the choicest of flowers. Then, again, light is necessary in order that the animal spirits may be kept refreshed and invigorated. No one is truly happy who in waking hours is in a gloomy house or room. The gloom of the prison has been ever considered as a part of the punishment of the prison, and it is so. The mind is saddened in a home that is not flushed with light, and when the mind is saddened the whole physical powers soon suffer: the heart beats languidly, the blood flows slowly, the breathing is imperfect, the oxidation of the blood is reduced, and the conditions are laid for the development of many wearisome and unnecessary constitutional failures and sufferings.

Once again, light itself, sunlight I mean, is of itself useful to health in a direct manner. Sunlight favours nutrition; sunlight favours nervous function; sunlight sustains, chemically or physically, the healthy state of the blood. Children and older persons living in darkened places become blanched or pale; they have none of the ruddy healthy bloom of those who live in light. You send a child that has lived in a dark court in London for a few days only into the sunlight, and how marked is the change! You hardly know the face again. Keep, then, this word in your minds, light, light, light; *sun*-light which feeds you with its influence, and leaves no poisonous vapours in its train.

Before I leave this subject, I want to say a word about light in relation to the sick. A few hundred years ago it became a fashion, for reasons it is very hard to divine, to place sick people in dark and closely-curtained bedrooms. The practice to some extent is continued to this day. When a person goes to bed with sickness, very often the first thing is to pull down the blinds, if there be venetian-blinds, to close them. On body and spirit alike this practice is simply pernicious. It may be well, if light is painful to the eyes of the sufferer, to shield the eyes from the light, or even shut the light off them altogether; but for the sake of this to shut it out of all the room, to cut off wholesale its precious influence, to make the sick-room a dark cell in which all kinds of impurities may be concealed day after day, is an offence to nature which she ever rebukes in the sternest manner.

This remark presses with special force in cases where epidemic and contagious diseases are the affections from which the sufferers are suffering, for these affections, as they live on uncleanliness, require for their suppression the broadest light of day. Moreover, I once found by experience that certain organic poisons, analogous to the poisons which propagate these diseases, are rendered innocuous by exposure to light. Thus in every point of view, light stands forward as the agent of health. In sickness and in health, in infancy, youth, middle age, old age, in all seasons, for the benefit of the mind and the welfare of the body, sunlight is a bearer and sustainer of health.

2. *Sleep at Home.*

I have been speaking about sunlight, and am led by this to refer to another and allied topic,—I mean night and hours of sleep. If it be good to make all possible use of sunlight, it is good equally to make as little use as possible of artificial light. Artificial lights, so far, have been sources of waste, not only of the material out of which they are made, but of the air on which they burn. In the air of the closed room the present commonly used lamps, candles, and gaslights, rob the air of a part of its vital constituent, and supply in return products which are really injurious to life. Gaslight is in this respect most hurtful, but the others are bad when they are long kept burning in one confined space. The fewer hours after dark that are spent in artificial light the better, and this suggests, of itself, that within reasonable limits the sooner we go to rest after dark the better. We require in the cold season of winter, when the nights are long, much more of sleep than we do in the summer. On the longest day in the year, seven hours of sleep is sufficient for most men and women who are in the prime of life; on the shortest day, nine hours is not over much, and for those who are weakly, ten or even twelve hours may be taken with real advantage. In winter, children should always have ten to twelve hours of sleep. It is not idleness to indulge to that extent, but an actual saving, a storing-up of invigorated existence for the future. Such rest can only be obtained by going to bed very early, say at half-past eight or nine o'clock.

It is really all wrong, at the present season, that we should be here robbing ourselves of sleep. It is as wrong as ever it can be that our legislators should often be sitting up, as we know they do, time after time, in the dead of night, trying against life to legislate for life. It is most foolish that public writers, who hold so many responsibilities in their hands, should be called upon to exercise their craft at a time when all their nature is calling out to them rest, rest, rest. It is said I am foolish for declaring these things. Is it so? I am standing by Nature, speaking under her direction, and, without a thought of dogmatism, I am driven to ask, May it not be the world that is foolish?—the world, I mean, of fashion and habit, which could, if it would, change the present systems as easily as it criticises the view that it ought to make the change. Any way, this I know, and it is the truth I would here express, that in every man, woman, and child there is, at or about the early time I have named, a persistent periodical desire for sleep which steals on determinately, which, taken at the flood, leads to a good sound night's rest, and which, resisted, never duly returns, but is replaced by a surreptitious sleep, broken by wearing dreams, restless limbs, and but partial restoration of vital power. I said the other night in this room, Make the sun your fellow-workman. I repeat the saying now. I do not say, Go to bed at all seasons with the sun, and rise with it, because in this climate that would not be at all seasons possible; but I say, as a general principle, as closely as you can, make the sun your fellow-workman; follow him as soon as you are able to rest, and do not let him stare at you in bed many hours after he has commenced his daily course. Teach your children, moreover, this same lesson, and the practice of it, whereupon there will be, in a generation or two, even in this land of fogs and dulness, a race of children of the sun who will stand, in matter of health, a head and shoulders above the children of this present generation.

3. *Beds and Bedrooms at Home.*

The mention of sleep causes me to say a word about beds and bedding, and bedrooms. It is a point of the greatest importance in a healthy home to let every person in the house have a separate bed. It is a most unhealthy practice for two persons of any age to sleep in the same bed. Every person requires some different condition from every one else in order to secure perfectly good repose. Take children as an example. One child requires more bedclothes than another, or a different kind of bed, or a different position before sound sleep can be secured; and this can only be obtained by giving a separate bed to each child. Then again, when two children sleep together, they are subject to the breath of the one or the other, and if both be quite natural it is bad; but if one be unnatural it is very bad; and if both be unnatural it is seriously bad. Near here, at this moment, a great experiment has been tried on this question with the most striking results. At the schools at Anerley, every scholar has his or her own bed; and the wise authorities there,—who have improved the health of the children under their charge until the mortality is reduced to three in the thousand annually,—tell me that few things have contributed so much to the grand results they have achieved as this one practice of having a separate bed for every child. It is important to have always a well-made bed, and everybody should learn to make a bed. A very soft or very hard bed is a bad bed. The bed should be sufficiently soft to allow all parts of the body to feel equal pressure and yet not so soft as to envelope the body. The clothes should be laid on lightly, not be closely tucked in. The clothes should be light as well as warm. Dense blankets and coverlets are always unwholesome. Every portion of the bedclothes should be every day spread out for a short time to the air. I do not object to light bed-curtains at the head of the bed: they keep off draught, they keep the light from the face of the sleeper, but they prevent the entrance neither of air nor of light.

I must add one word about bedrooms. It should always be remembered that the bedroom is the apartment in which one-third, at least, of the whole life is passed, and this remembrance should suggest that the bedroom ought to be the room on which most trouble after health should be bestowed. The rule that is followed is, with few exceptions, the reverse of this. The sitting-room and the drawing-room are made subjects of the greatest attention: but the bedroom may be small, close, at back of the house, at front of the house, anywhere, if it be but convenient to get at. It may not even have a fireplace; it may have the smallest window. It is often half a lumber-room, a place in which things which have to be concealed,—old boots and shoes, old clothes, old boxes,—are put away. Its walls, covered with several layers of paper, may be furnished with pegs, on which to suspend a wardrobe of garments; and it is constantly decorated, for snugness' sake, with heavy curtains and blinds at the windows, and carpets all over the floor. These errors are unpardonable, and health at home is impossible where they are committed. The bedroom should be so planned that never less than 400 cubic feet of space should be given to each occupant, however good the ventilation may be. The walls should be coloured with distemper or with paint that, like the silicate paint, can be washed three or four times a year. The windows should have nothing more than a blind and a half muslin curtain. The floors should have carpets only round the beds, without valances from the beds. The furniture should be as simple and scanty as is possible; the chairs free of all stuffings or covers that can hold dust. Of all things, again, the room should be kept clear of vestments that are not in use. From time to time a fire should be made in every bedroom, that a free current of atmospheric air may sweep through it from open doors and windows. I need not say that the floors should be kept scrupulously clean; but I would recommend dry scrubbing as by far the best for this purpose.

4. *The Bath at Home.*

To secure health at home some simple provision should be made by which the body of every person who lives at home may be subjected to the bath daily. This wholesome process is frequently neglected from the excuse that there is no convenience for a bath. The excuse is more plausible than real. A formal bath is not at all necessary. A shallow tub, or shallow metal bath, in which the bather can stand in front of the washhand basin; a good sponge; a piece of soap; two gallons of water, and a good large towel, are quite sufficient for every purpose of health. To stand in the shallow bath, and from the washhand basin to sponge the body rapidly over from head to foot, and afterwards to dry quickly, is everything that is wanted if it be carried out daily, and this may be so easily done, after a little practice, that it becomes no more trouble than the washing of the face, neck, and hands, which so many people are content to consider a perfected ablution. In winter time the water should be tepid, in summer cold; and once a week there should be dissolved in the two gallons of water a quarter of a pound of fresh washing soda. This addition cleanses the skin effectually and removes acidity.

5. *The Air at Home.*

In order to secure health at home it is necessary to maintain, as far as can be, an equable temperature in the different rooms,—a temperature of 60° Fahr. is nearest to the best,—a free access of air without draughts, and above all things, an air that is dry. Washing-days at home amongst the poor are the days of most danger to the young. In the damp atmosphere thus caused colds, sore throat, and croup find easy development; and in a house persistently damp from any cause, consumption of the lungs is induced as if under an experiment devised for the express purpose of production.

6. *Annual Cleansing at Home.*

From the more strict of our Jewish fellow-subjects I take my last lesson for "Health at Home." Their system of complete household cleansing once a year, the cleansing of every article, great and small, of every wall and floor and door and lintel, and the removal and destruction of all organic refuse, however minute, is a practice which, above all others, has so saved this wise and discerning people from the scourges of the great plagues, while all around have been stricken and destroyed, that a miraculous preservation has more than once accounted for what was a mere natural sequence and natural necessity. Health at home calls for this salubrious physical sanctification in every domestic centre and circle once a year at least.

And now I leave my learned colleagues to

descant on ventilation, good food, good air, and other accessories to health everywhere, at home and abroad. And though by our united efforts we may not essay to lead you direct to Salutland and its hundred years of happy life, we shall take you, if you will go with us, a long way towards even that promised commonwealth of health and long life.

THE NEW FREE LIBRARY AND MUSEUM, DERBY.

In a recent issue, when speaking of a crisis in the history of the Derby Mechanics' Institution, we referred to the Free Library and Museum recently erected there and presented to the town by Mr. M. T. Bass, M.P.,—in other ways a munificent friend to Derby.

We now give a view of that building, the foundation-stone of which was laid on Wednesday, the 25th of October, 1876, by the donor. It stands in the Wardwick, on the site of the old library. The premises, which up to that time had served the purpose, were formerly the town mansion of a well-known county family. The designs for the new buildings were selected in competition. The plan is as nearly as possible in a square. The entrance is placed in the centre of the front, and has a spacious hall, opening by a glazed screen and folding-doors into a corridor.

The room at the end of the corridor to the left of the entrance is intended for use as a ladies' reading-room, and is separated from the general news or reading-room by an open wrought-iron screen of ornamental character. The corresponding room at the other end of the corridor is for students attending the reference reading-room. On the opposite side of the corridor, and occupying the central portion of the building, is placed the lending library. This, as being one of the principal features of the scheme, has been given due prominence. The size of the room is 56 ft. by 24 ft., and in order to have thorough ventilation, and also to obtain additional wall-space for books, it is carried up to the full height of the building, nearly 40 ft., having a small gallery carried round with bookcases in it. The gallery is approached by the upper corridor of the main building, and also by a circular iron staircase from the ground-floor. The lighting of this part of the building is by a lantern in the roof. Additional light is procured by the windows between the bookcases at the back. The entrances for the public are near each end of the corridor. The floor of the library within the counter is raised some 16 in. above the other floor, in order to give the librarian and his assistants supervision of the adjoining departments. The division between the library and the main corridor, and also between it and the reading-rooms on either side, is of timber, with the upper portions filled in with ornamental glazing, in lead work, of appropriate character. At the right of the library is placed the reference reading-room, which is 56 ft. long by 24 ft. wide, and has an additional large semicircular bay in the centre of the side, for the use of students. It is lighted by large windows at the side and end, and the artificial lighting is by large lamps, manufactured by Benhams, the peculiarity of which is that they remove the vitiated air after combustion. The newsroom is placed at the left of the library, and is similar in size and in other respects to the reading-room.

A small angle-turret is placed at the north side of the building, near the curator's house, having a spiral staircase going from the bottom to the top of the building, and opening on to each story. An entrance to the ground-floor, for the librarian's use, is placed on the ground-floor, thus giving direct access from his house adjoining.

At the left of the main entrance a small room is provided for a private office for the chairman and secretary. The fireplace, which is placed in an angle of the room, is quaint and old-fashioned, and in addition to shelves and small galleries for old china, has a small cupboard formed in the centre. The ceiling is appropriately decorated in colours.

The principal staircase consists of flights of steps opening from the corridor on each side of the hall, and meeting in a central flight from the first to the main landing. It is of Hopton stone, with ornamental metal balustrade and massive oak hand-rail, and is of good width.

At the end of the upper corridor, to the left of the main staircase, is the curator's room. The corresponding room at the other end of the corridor is the committee-room, otherwise called the panelled room. This is of the same size as the curator's office, and is panelled with old oak.

The floor is of oak, laid herring-bone fashion. The ceiling is finished in plaster, elaborately moulded and enriched.

The museum forms three sides of a square, having ingress and egress at each end of the corridor, thus avoiding any clashing between people entering and leaving.

With the exception of windows in the circular bays, the whole of the museum is lighted by lanterns and ceiling lights from the top.

The central room at the back of the museum has been arranged to serve as a picture-gallery. The roof is supported on stone corbels at the angles, carved to symbolise the four seasons.

At the north side of the building is placed a house for the curator, and at the south a lodge for the porter, the basement containing the heating arrangements for the museum buildings.

The style of the building is Jacobean. The front elevation has the entrance-hall carried up as a tower, with octagonal angle-piers finished with open-timber turrets. The central part of the tower is also of open-timber work, surmounted by a circular roof. The wings have the roofs hipped back, and the ridges finished with wrought-iron ridge-cresting and finials. The space between the tower and wings is arcaded in both stories, but in general treatment is subordinated to the more important parts of the design. Large oriel windows, with splayed angles, are placed in the wings, and a circular one over the main entrance. The exterior of the building is faced with Derby pressed bricks, with moulded strings, arches, &c., of Coalville bricks. The dressings, oriel windows, turret, &c., are of Stanton stone. Terra cotta is introduced in panels and other places. This has been executed by the Coalville Brick and Tile Company, from designs prepared by the architect. All the external timber work is of oak. The staircase, corridors, steps to front entrance, &c., are of Hopton Wood stone, polished. The roofs are covered with strawberry-coloured Broseley tiles. The glazing of windows and screens in the principal parts is of cathedral glass of different tints, in lead lights, arranged in geometrical patterns. The internal joiner's work is of yellow deal, painted.

The carving includes, over the front entrance, the arms of the town, supported by sprays of bay; the arms of the donor and other well-known families are introduced at appropriate points.

Ventilation is provided for by the admission of pure air in various places, and by a system of exhaust-shafts to collect and remove the vitiated air. These are carried up into the tower, and terminate in Howorth's ventilators, of large size.

The building is set back from the line of the Wardwick, which has been considerably widened at this part, and is enclosed by a substantial stone curb, surmounted with wrought-iron railings. The gates and gate-posts correspond with the railing.

The several works have been executed by the following firms:—The general contractors for the building, Messrs. G. Woods & Son, of Blackburn, Derby, and Bolton; ornamental glazing, by Mr. Evans, of Birmingham; decoration, by Messrs. Best & Lea, of Manchester; metal-work, Messrs. Freeman & Collier, of Manchester; heating, Mr. Crump, of Derby; ventilation and gasfitting, Mr. Evans, of Derby; electric and other scientific appliances, Mr. Davis, of Derby; the carving, Messrs. Earp, of London and Manchester; marble concrete floors in corridors, by Mr. Oppenheim, of Manchester; and marble mosaic in hall, by Mr. Burke, of London and Paris; the bricks were supplied by Mr. James Flint, of Derby; iron girders, by Messrs. Fowke & Co.; the ventilating apparatus for the museum, by Messrs. Handyside & Co.; the iron palisading to the Strand, by Messrs. Handyside & Co.; the stoves and fittings, by the Derwent Foundry Co.; the marble chimney-pieces and hearths, by Mr. Tinkler, who also executed all the wood-carving and models for plastering; the whole of the wood-turning throughout the building, by Mr. Harrison, St. Mary's-gate; the cases in the museum, by Messrs. Sage, of London. Mr. Cooling, Mileash Nursery, Derby, laid out the grounds.

The whole of the works have been carried out from the designs and under the superintendence of Mr. R. Knill Freeman, of Bolton-le-Moors.

Decoration.—Bearing in mind the two-fold character of the building as a Free Library and a Museum of Antiquities and Natural History, an attempt has been made to symbolise these uses; first, by a cartoon in the upper part of the lending library, representing Caxton producing his first impressions from his printing-press. The "illuminators" are looking on with curiosity, while the Court Fool is taunting them, and seems to say, "This is the age of progress, and your occupation is at an end." The printer is likewise surrounded by patrons interested in his work. The space on either side of this subject is filled with ornament, the greater portion of which is a conventional treatment of the olive, with the fruit in silver, indicative of the peace and concord resulting from the use of books and the cultivation of letters. Continuing the idea of progress in all branches of knowledge from Caxton's time to our own days, and individualising those luminaries whose search after truth has so largely increased the pleasures of knowledge, is a frieze containing the names of some of the most eminent men. Thus on the west side of the frieze, the history of Fiction is represented by Fielding, Goldsmith, Dickens, and George Eliot. At the end, facing the visitor on entering, Science is shown by the names of Cuvier, Lyell, and Darwin. On the south side, Philosophy claims attention by the names of Bacon, Butler, Locke, and Herbert Spencer, a townsman. Poetry has its representatives on the screen in the main corridor.

The panels of cove have a floral arrangement to serve as a reminder of the other uses to which the building is appropriated.

The large museum galleries and the connecting gallery are more simply treated. A mixed arrangement of ornamental forms, combined with suggestions of animal and vegetable life, is its leading feature.

The upper and lower corridors have been coloured with a view to their ultimate use as sculpture and picture-galleries, and for that purpose the walls are a Pompeian red, with dark dado and an ornamental frieze.

The committee-room (in which old oak panelling that has been removed from Exeter House, has been successfully restored) has a painted frieze above the wainscoting, representing a growth of English oak, with golden acorns, emblematical of virtue, force, and strength. On these oak branches are suspended the heraldic shields of many local worthies, the glowing colours and quaint devices of which give a highly picturesque, as well as historical, character to this apartment. The panelled and enriched ceiling is picked out in colours and gold.

The chairman's private room, on the ground-floor, has its walls covered with tapestry.

The two large reading-rooms and the two rooms adjoining have been quietly coloured. The borders to dados are somewhat quaintly treated.

The artistic metal-work throughout the building is coloured chiefly in metallic colours, relieved by gilding.

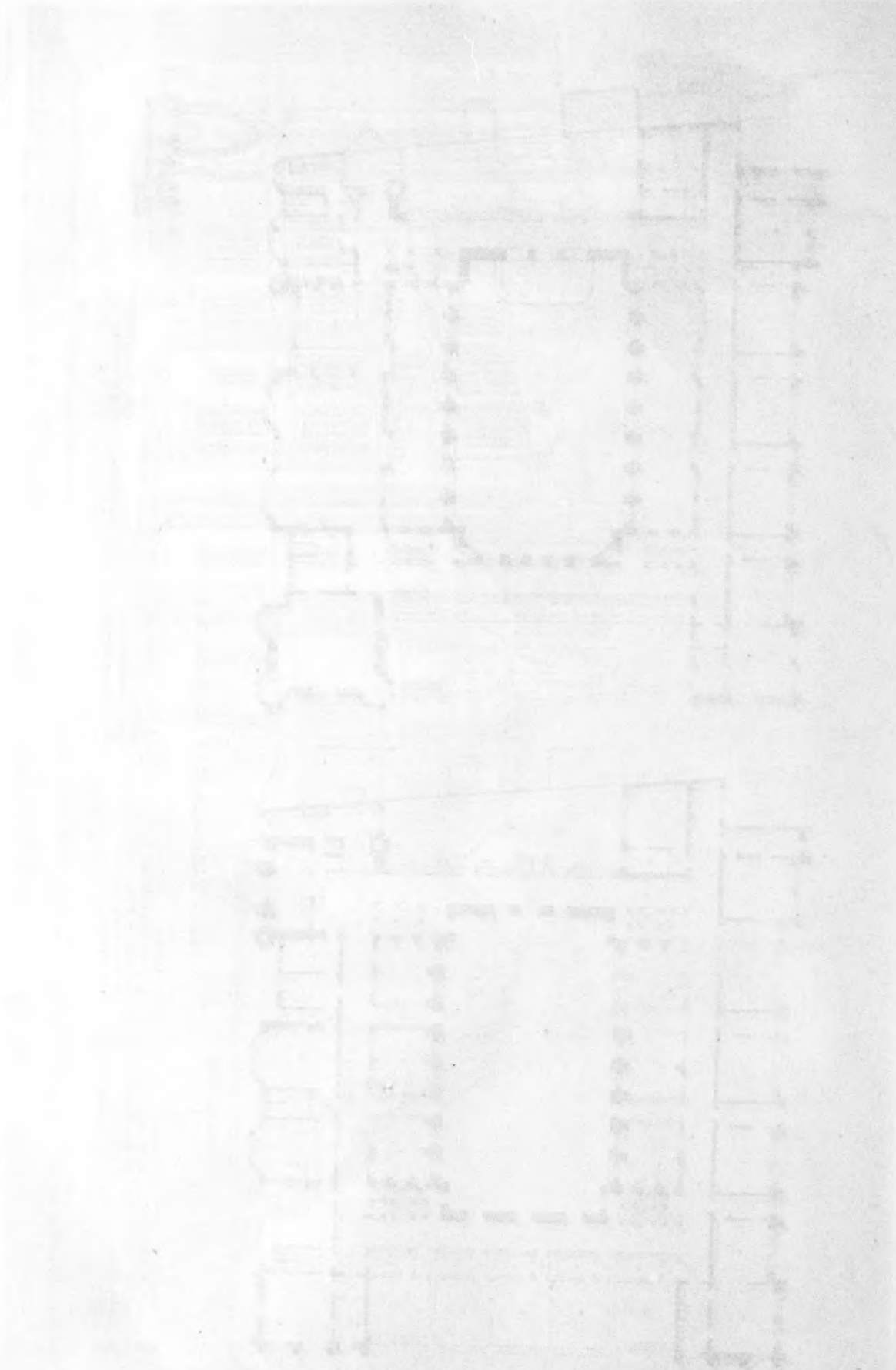
NEW MUNICIPAL BUILDINGS, PERTH.

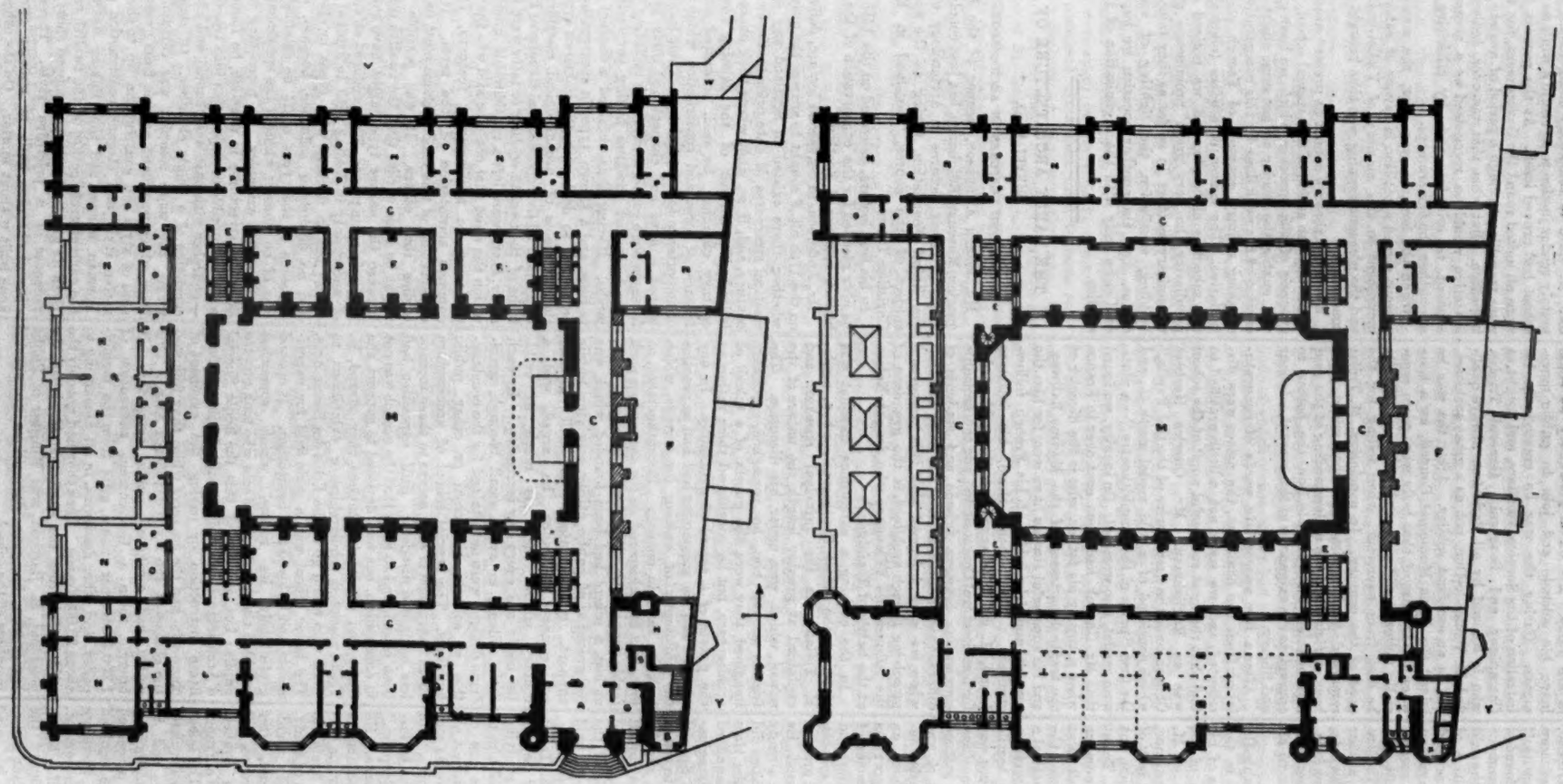
The new municipal buildings at Perth are now so far completed that the Council-room was formally opened on the 7th inst. The resolution to erect new municipal buildings was passed at a meeting on the 10th of September, 1877, and the memorial-stone was laid on the 10th of June following by Lord Kinnaird, with full Masonic honours. The building, the plans of which were prepared by Mr. Heiton, Perth, is in the Tudor style, and occupies the site of the old police office and adjoining property, acquired by the Police Commissioners for this purpose. The building has a frontage to Tay-street of 72 ft., and to High-street of 57 ft. A leading feature in the elevation is a reproduction of St. Mary's Tower, a prominent object in the old building. The main entrance leading to the Council-room is from High-street. The Council-room, situate on the first floor, is a spacious hall of 41 ft. by 25 ft., and is larger than the old chamber. The new Burgh Court-room, 30 ft. by 22 ft., is on the same floor, having a public entrance by Tay-street, and a private one from the Council-room. The total cost of the building will be about 12,000*l*. All the work has been carried out under the superintendence of Mr. George Wells, the master of works.

THE NEW FREE LIBRARY AND MUSEUM, DERBY.—Mr. R. Knill Freeman, Architect.

CITY OF LONDON SCHOOL.—Design by Messrs. John & S. Flint Clarkson, Architects.

[See p. 1251, ante.





GROUND PLAN

FIRST FLOOR PLAN

Scale of 0 5 10 20 30 40 50 60 70 80 90 100 feet

A. Entrance-hall.
B. Porter's Entrance.
C. Corridor.
D. Cross Corridor.
E. Staircase.
F. Area.
G. Porter.
H. Book-room.
I. Secretary.
J. Committee-room.
K. Library.
L. Head-master's Room.
M. The Great Hall.
N. Class-room.
O. Cloak-room.
P. Lobby.
Q. Sliding Doors, combining Class-rooms.
R. Dining-hall (dotted lines show Class-rooms, &c., if formed).
S. Lift.
T. Ladies.
U. Assistant Masters.
V. Open Playground (covered Playgrounds under north and west portions of building).
W. Covered Way to Latrines.
X. W.C.s and Lavatories.
Y. The Royal Hotel.

UPPER FLOOR:—

School Culinary Department, and Porter's Residence, &c., in east portion of front building. Lecture-room for Natural Science over Dining-hall, reached by south-east and south-west Staircases, with Chemical Class-room, &c., to the west of it.

CITY OF LONDON SCHOOL.—Design by Messrs. J. & S. Flint Clarkson, Architects.

[See p. 1251, *ante*.

A SPECIAL SCHOOL OF ARCHITECTURE.

On Monday last M. Bardoux, who preceded M. Jules Ferry as Minister of Public Instruction, presided at the annual opening of the Special School of Architecture, Boulevard Mont-Parnasse, Paris. The ceremony was interesting from more than one point of view, and the institution itself is well worthy of a visit. This school was founded fifteen years ago, recognised by the Government as of public utility in 1870, and received the gold medal of the great International Exhibition of 1878. By the side of M. Bardoux we noticed seated on the platform M. Jenssen, physician and member of the Institute; M. Simonet, architect, who with M. Davioud built the theatres of the Châtelet and the Théâtre Historique; M. Chipier, the eminent author and archæologist; and M. Kœchlin Schwartz, the wealthy Alsatian manufacturer, whose indefatigable devotion to public and educational questions has rendered his name familiar to all earnest and patriotic Frenchmen.

The event of the morning was undoubtedly the speech of M. Emile Trélat, who is the director of the school. The gracefulness of his style, and the eloquence and warmth of his diction when alluding to the memory of M. Viollet-le-Duc, thoroughly roused the audience, and produced a deep impression. The lack of space forbids our reproducing this oration, but we may translate a few points. M. Trélat remarked that in travelling through a number of towns he had received thanks on all sides from persons who had benefited from the technical education conferred in so practical a manner by this special school of architecture. There had, however, also been some hostile criticisms, and the object of this meeting was to ward off the effect of these animosities. Some persons maintained that what sufficed yesterday was enough for to-day; but it was surely evident that every day the profession increased in its knowledge, and, therefore, an education considered ample for the previous generation no longer satisfied the exigencies of the ever-changing circumstances of life and progress. Far from opposing the official schools, which it was sometimes urged possessed greater *prestige*, the special school would assist its pupils to enter the former. There was already a great public school, but its organisations did not harmonise with the means and the time pupils have to give, nor did its workrooms afford the same free scope to the display of imagination on the part of the students. The Special School of Architecture did not seek to act in opposition to official teaching, but to supplement and strengthen it. Finally, to destroy all suspicion of antagonism, it had been determined to create scholarships by which pupils of the Special School would have their expenses paid when studying at the École des Beaux Arts.

Alluding to the subjects taught, M. Trélat insisted on the importance of looking beyond the grave, and vivifying the present by studying the achievements of the past. This led him to speak of M. Viollet-le-Duc, who was one of the founders of this school. "We were not all his disciples, but we all admired his works and words, and glorified his audacious genius. He did not take part in our instruction, but he displayed the greatest interest in our enterprise." We are lost in the number of his works. He was an incomparable designer and builder, an indefatigable writer, who, after spending sixteen years over his "Dictionary of Architecture," launched forth into new spheres of study. At sixteen, his tastes led him to study architecture. He went to the schools, and, after studying, travelled through Italy, Greece, and Sicily. Not satisfied, he returns to France, examines every province, and discovers a France which no one had known before. The books then existing were very poor and incomplete, but he ransacked them thoroughly, and in studying history, became the best of historians. After completing his dictionaries, he perceived that modern civilisation was being re-moulded by the progress of science. He therefore launched himself into the scientific movement. For ten years, at the risk of his life, he explored Mont Blanc, and finally produced the finest maps and description of that giant mountain. The "frightful activity" of his mind was never checked, and in spite of the number of his works, they were all well done, and all done by himself. Whatever he attempted he did openly. Any one was welcome to study his works; his doors were open from eight to ten every morning, and to all comers. He considered himself the comrade of every architect and the friend of every worker. He was calm, independent, and indifferent to the opinions of the world. He was solely devoted to his work, never asked for favours, and fought the battle of life alone. Yet on an emergency he could leave his solitude and join in public movements. During the war he created the 1st battalion of the Service Auxiliare, and fought at Champigny and Bougival General Tripier, who is beloved by all Parisians, always qualified M. Viollet-le-Duc, not as a great architect, but as an excellent soldier. After the war he joined the Paris Municipal Council, at a time when the labours of that body were more especially delicate, difficult, and arduous. Finally he died from overwork, when toiling for the good of the country. In conclusion, M. Trélat remarked that, contrary to what might have been anticipated, the understanding of the past had enabled M. Viollet-le-Duc the better to appreciate the exigencies of the present,—labour and liberty.

After a few appropriate words of congratulation from the chairman, the prizes were distributed, and we were not a little gratified to find that the most successful pupil of the school was an Englishman. Mr. Charles Herbert Church took the first "prize of the Old Pupils," which consisted of a gold medal worth 4*l.*, and the first "prize of the Amphitheatre,"—a platinum medal, also worth 4*l.* On inquiry, we found that Mr. Church had been sent over to France when a boy by his father, who is the director of the traffic department of the Madras Railway, and his successful studies have won for him the respect and friendship of his French fellow-students. First among these, his intimate friend, M. de Villeneuve, won the gold medal for Architectural Composition; and this amicable competition between friends and students of different nationalities seemed the more striking when we were informed that this young and promising French architect is the grandson of the Admiral de Villeneuve who fought Nelson at the battle of Trafalgar!

In the evening a sumptuous banquet was given at the Hôtel Continental, when, again, M. Trélat was the principal speaker, and explained at greater length the nature of the school which was under his direction. The friends around him, he remarked, probably imagined they were the guests of a school of architecture, but he considered them rather as the guests of a school of philosophy. In any case, he and his supporters had had to practise the philosophy of waiting for success, which took its time in coming. Encouragement, at first, was but whispered in the ear, and on such feeble support the edifice had to be raised. Now, at last, a school had been founded which was recognised as of public utility, receiving public support, and destined to still greater achievements. France, he urged, was a country where there is much to build. Its needs are every day increasing. In each little village, in every small borough, ambitious designs were entertained for the construction of schools, municipal or other public buildings. The special school of architecture offers instruction of easy access to these more or less benighted districts. Still, opposition had been raised, and to show that the school was not in antagonism, but was destined to support the State and official institutions, they offered, M. Trélat repeated, scholarships or exhibitions to those who would go to the École des Beaux Arts. The latter school was a wide field for experiments, and he loved that institution. It opened gratuitously its rooms, which somewhat troubled the private architects who took private pupils; but, in spite of this, the École Spécial d'Architecture determined still further to facilitate instruction by paying the expenses of those who had the *feu sacré* while they followed the classes of the École des Beaux Arts. This action had awakened public sympathy. It brought them a Government subvention of 1,200 francs per annum, gifts from the municipality, and other donations, in all amounting to about 20,000 francs. Then they had not only the gold medal from the exhibition, but when the president, M. Bardoux, was Minister of Public Instruction, he gave decorations to several members of the school.

M. Jenssen, who, in the absence of M. Bardoux, presided at the banquet, and as an ancient professor of the school had witnessed all the difficulties that had been overcome, spoke next. Through all he had felt the greatest sympathy for the work undertaken. At this the first meeting of architects which had taken place since the death of M. Viollet-le-Duc, they might appropriately drink to his memory. With regard to opposition, M. Jenssen thought that man was, on the whole, good, and would, therefore, in spite of temporary antagonisms, ultimately render justice to so useful a work as this school had proved itself. At the present they were all united round the Government, for they were travelling through a period of anxiety and transition. But when this was over, individual initiative would be recognised as a necessary element to criticise, and, by criticising, to strengthen the Government.

When the banquet was over, the members present signed a petition in favour of raising a monument to the memory of Viollet-le-Duc; and the pleasant evening was thus brought to a conclusion.

We regret that we cannot at present examine more fully the action of this special school. The synopsis of the speeches which we have given will enable the reader to get some slight conception of the work done by this comparatively-speaking solitary example of French private initiative. The course of studies followed at the school is elaborate, and we noticed as a peculiarity the very great prominence given to sanitary matters in so far as they relate to building, ventilation, the lighting of rooms, drains, &c. On another occasion we hope to deal more fully with the organisation of these studies.

THE EARLY ARCHITECTURE OF SCOTLAND.

THE RHIND LECTURES IN ARCHÆOLOGY.

Mr. Joseph Anderson, keeper of the Antiquarian Museum, Edinburgh, has just concluded a course of six lectures in Archæology under the Rhind Foundation, taking as the special subject of the course, "Scotland in Early Christian Times."

In his first lecture, delivered on the 14th ult., he ably pleaded for the conservation of the prehistoric remains of Scotland.

Mr. Anderson, in his second lecture, delivered on the 17th ult.,* sought to answer the question whether there existed in Scotland any ecclesiastical structures of date prior to the twelfth century, and, if so, what where their characteristics? The earliest of the existing twelfth-century churches, he said, presented certain features of form and construction which were of importance for the inquiry. Their form embraced a nave and chancel, and their typical features were round arches with radiating joints over doors, and windows having perpendicular jambs. Having thus obtained a distinct point in time, and a known type in construction, he proceeded to deal with the unknown types on the principles of archæological classification. Supposing all the ecclesiastical structures known to be of the twelfth century or later were swept away, there were left a considerable number of which the most that could be said was that they possessed no architectural features, in the common acceptation of the term. It was obvious that of this residue there must be some earlier than others. It was possible there might be some earlier than the twelfth century, because the earlier type might have survived longer in some places. This produced an element of uncertainty in dealing with individual specimens; but in dealing with types or classes it had no disturbing influence, because, if the sequence of the types could be established, it was of no moment whether the specimens were early or late examples. In proceeding to consider the structures in question, he found they were susceptible of separation into two classes,—churches with nave and chancel, and churches consisting of a single chamber. Of these two forms, the more complex was certainly the later, which was found passing from great rudeness of style and construction up to the decorative style and elegant construction of the Norman manner, and thus linking itself on to the current architecture of the twelfth century. Even its greatest rudeness stopped short of the rudeness of a primitive style. There were chancel churches built of unhewn stone, but none built without mortar. On the other hand, the single-chambered type of church, which never rose to the dignity of the Norman type, could be traced back by a series of gradations

* We avail ourselves of the very full reports in the *Scotsman*, from which we condense the accompanying *resumé* of the lectures.

into a type utterly primitive, and corresponding in all its characteristics with the type of the earliest churches in Ireland. It was not to be implied that any church found to consist of a single chamber was on that account necessarily earlier than one constructed with a chancel; the conclusion related to the typical form alone, and did not necessarily apply to all the specimens of that form. The thing determined was merely that the single-chambered form went further back than the chancelled form. What was the precise date of any specimen of either was a question undeterminable by any scientific method. The chancelled churches on the mainland of Scotland were mostly Norman in style, and this removed them from among those with which he had to deal; but an exception might be made in the case of one which was unique in its features,—the church of St. Regulus, St. Andrews. This beautiful ruin had been assigned to many and various dates. Sir Gilbert Scott, one of the most competent authorities, found it difficult to conjecture its age, but imagined it to be anterior to the introduction of Norman architecture into England. But whatever might be its precise date, St. Regulus' belonged to the most advanced type of chancelled churches, consisting of nave, chancel, and apse; and its typical form linked it on with the group of twelfth-century churches. Outside of the mainland there occurred a very remarkable group of chancelled churches in Orkney and Shetland. They were small in size, rude in construction, and possessed no architectural features sufficiently distinctive to determine their age. One of these, in the Island of Egilsay, was, like the church of St. Regulus, unique in its features. It consisted of a nave and chancel architecturally distinguished, but differed from all other churches in Scotland in having a round tower, joined to the west end of the nave. There was nothing in the material or character of the tower to suggest that it was not built at the same time as the church; and as it was this structure which gave the church its special character, it was necessary to inquire what was its special significance. There were only two other towers of this type in Scotland,—one at Brechin, the other at Abernethy. Neither of these was now connected with any remains of a church, and they seemed to have been always isolated buildings. The Brechin tower stood in the churchyard, and was built of large irregular blocks of reddish grey sandstone. The stones were cut to the circle of the tower, but not squared at the top or bottom, and therefore not laid in quite regular courses. The tower was perfectly circular throughout, and tapered regularly from the base to the summit, the interior diameter at the base being 7 ft. 8 in., and the thickness of the wall 4 ft. 2 in. Internally, the tower was divided by string-courses into seven sections or stories. While some of the windows had their sides inclined towards each other, others had the sides perpendicular. The structure thus showed the junction of two distinguishing and dissimilar styles, one of which had come down to our own age, while the other stretched back to the very commencement of architectural construction. The doorway was at the height of 6 ft. 8 in. from the ground, faced the west, and was semicircular-headed, with inclining jambs, its arches being cut out of the solid. The tower at Abernethy stood in the churchyard, and was built of stones dressed to the curve and laid in courses. Up to the twelfth course above the ground-level the material was hard grey sandstone, which had resisted the weather; above this the tower was built of buff-coloured freestone, now considerably weather-worn, especially at the joints. There was only a very slight batter, so that the tower wanted the grace of proportion which distinguished that at Brechin. The doorway faced the north, was 2 ft. 6 in. above the present level of the ground, and had inclined jambs and a semicircular head cut out of one stone externally. The tower was divided internally into six stories by string-courses. Some of the windows were semicircular-headed, and all had inclined jambs. In the general features of their form and construction these two towers were strikingly similar; so that no one could hesitate to pronounce them both examples of one specific type. From the solidity of their construction and completeness of their preservation, it was reasonable to conclude that, if there had ever been many like them, traces would have been left in other localities. But there were no such remains, and there was no evidence of any kind to show that there ever were more of those towers on the mainland of Scotland. Yet, looking to their completeness of character and general correspondence of form, structure, and arrangement, it was impossible to regard them as freaks or accidental products of local circumstances. Thus the archæologist was led to the conclusion that they must be outlying specimens of a well-marked type which must have existed somewhere, if not in Scotland. Now, in Ireland seventy-six round towers of this type were known to exist, and there were notices of twenty-two others not now in existence. These Irish towers showed the features characteristic of the two in Scotland; therefore those two were stragglers from a great typical group which had its habitat in Ireland; and all questions as to the origin, progress, and period of the type must be discussed with reference to the evidence derived from the principal group. From the inquiries of Dr. Petrie and Miss Stokes, it appeared that the Irish towers admitted of classification into four styles:—(1.) The style in which the tower was built of rough stones, untouched by hammer or chisel, with door square-headed, windows square or triangular-headed, and both constructed of the same material as the rest of the walls. (2.) That in which the stones were roughly hammer-dressed, rounded to the curve of the wall, and laid in courses, but often irregularly; the door semicircular-headed, the arch being cut out of the lintel stone, and sometimes decorated with an architrave; the windows constructed of stones roughly squared, but of the same material as the rest. (3.) That in which the stones were laid in horizontal courses, well-dressed and carefully worked to the round and batter of the tower; the door semicircular-headed, the arch being formed of three stones and of finer material, and decorated with mouldings; the windows also of finer material than the rest of the walls. (4.) That in which the building was of rough ashlar masonry, open-jointed, and closely analogous to the Norman masonry of the first half of the twelfth century. The whole group of these towers therefore belonged to the period of transition from the flat lintelled style of ecclesiastical architecture to the round-arched and decorated Irish Romanesque. It was established that this transition was accomplished between the commencement and the close of the tenth century; hence the first group of the towers fell to be included within that limit, and the whole period of this type of round tower structure would lie between the end of the ninth and the beginning of the twelfth century. The adoption of this conclusion greatly reduced the antiquity claimed for those round towers on grounds hitherto deemed sufficient. The conclusions from internal evidence were strengthened when it was found that external evidence led to the same result. Miss Stokes had pointed out that in the majority of instances the towers were on or near the sites of churches which suffered from the ravages of the Norsemen or lay in the track of their plundering expeditions; and that the purpose of the tower, as demonstrated by its form, isolation, and arrangements, was to afford an asylum for the ecclesiastics, and a place of security for the bells, books, croziers, and shrines under their guardianship. Now, the Norse invasions in question commenced at the close of the ninth century, so that on both lines of evidence the same limit of antiquity was reached for this typical form. The beginning of the tenth century was therefore the limit beyond which the antiquity of the Scottish towers could not be extended. The special features of the Brechin tower connected it with the third style of the Irish towers; so that in Ireland it would have been referred to a period later than the first half of the tenth century; and if the historical evidence did not materially support this conclusion, it supplied nothing that could be established against it. The Abernethy tower might be of two dates; but whether of one or two, the difference between it and the Brechin tower could not be very great, because in both its upper and lower portions it must fall in with either the third or fourth style of Irish towers. The lecturer gave reasons for not concurring with Dr. Petrie in assigning this tower to the eighth century, and went on to remark, in regard to round towers in general, that the type died out by degradation of form and function. The first step in this process was that the tower was placed so as to form part of the church structure, as in Egilsay; in the next stage the tower became a simple belfry, perched on the end of the church. Passing on to speak of the transition from the single to the double chambered type of church structure, Mr. Anderson remarked that the church of Lybster in Reay,—so far as he knew, the only specimen of its kind now existing on the mainland of Scotland,—consisted of nave and chancel. It was roughly built of undressed flagstones of the district. The doorway in the west end was flat-headed, and like the doorways of the early Irish churches, the sides being inclined to each other. The chancel-entrance was flat-headed, with inclined sides, differing neither in form, dimensions, nor character from the door. The chancel arch was the characteristic feature of all churches of this typical form, and no earlier type of chancel entrance was to be found than one which was not differentiated in any feature of size, construction, form, or ornament, from the external doorway. In the roughly-built and utterly rude structure at Lybster was seen the simplest form of a chancel church; yet, with all its rudeness, it was as clearly a chancel church as one in the advanced style of the Norman period. The primitive rudeness and simplicity was only reached in churches of one chamber, with one door and one window. In Benbecula was found the only example of a transition stage in the conversion of a single-chambered church into a chancelled church by the addition of a chancel. In several other instances throughout the Western Islands, an old church and an older one were found contiguous to each other, and in all such cases the older was invariably the smaller. It was thus evident that among the single-chambered churches there were two varieties, one linking on with the chancelled church, and one which did not. The church with windows in the side-walls, though single-chambered, was of the former variety, and was probably of the period of the chancelled church, because it was the addition of the chancel that created the necessity for lighting the nave separately. On the other hand, the type of church of small size, with one east window and a west door, was neither linked to the chancelled form, nor could be converted into it without losing its own distinctive features. Of this primitive type there were two varieties—those built with lime and those that reached the utterly simple character of construction which consisted of placing stone upon stone without binding material. One of the best examples of the first variety was found in the island of Inchcolm.

On the 21st ult. Mr. Anderson delivered his third lecture, and after remarking that neither the ancient ecclesiastical remains nor the early history of Scotland could be studied apart from those of Ireland, the study of Scottish remains being the study of a derived group exhibiting local peculiarities, but possessing the general features and characteristics of the principal group, of which it was an outlier or offshoot, proceeded to lay down the following general principles as necessary to be kept in view in the inquiry:—(1.) That the typical characteristics of a group were most readily obtained from the study and comparison of the greatest possible number of the most perfect specimens. (2.) That that number was more likely to be met with in the principal group than in the derived group. (3.) That the characteristics thus obtained as typical of the principal group would also be present in the derived group. The earliest churches in Ireland, he went on to remark, were constructed within the fortified enclosures of the chiefs who embraced the faith, and and took its preachers under their protection. The system which thus arose in the incipient stages of the church's growth continued long after the circumstances which rendered it necessary had passed away. The association of the church with a fortified enclosure, which had been at first dictated by necessity, became established by long custom as the normal form of the ecclesiastical structure, and the rath or cashel surrounding the monastic buildings remained to mark their separation from the outer world long after its primary purpose as a defensive structure had ceased to be recognised. The rath itself was a construction of Pagan origin, indigenous to the country. The church which it enclosed was a construction of external origin, the form and purpose of which were alike foreign to the habits and unfamiliar to the usages of the people. For this reason there were no typical forms of native structures with which it could be confounded. However nearly it might approach to them in style of construction, it never lost its distinctive character. The rath which surrounded it remained undistinguishable

from a rath of the Pagan time; but there was no Pagan structure which, in Scotland or Ireland, assumed the form or character of a Christian church, however early or rude. The rudest and earliest of those that had survived the lapse of time possessed so few of the features we were now accustomed to associate with ecclesiastical buildings that it was necessary to divest one's self of all preconceived notions on the subject, and approach their investigation in the spirit of a pure scientific inquiry. The basis of the investigation was the historical fact that the constitution of the early Scottish Church was monastic. Hence the rath which surrounded the place of worship also enclosed the dwellings of the family of ecclesiastics. Those dwellings, like the rath, were not necessarily affected, either in form or style, by the change of faith of their occupants, and they continued to be constructed after the ancient native manner. If, therefore, there were found in Scotland a church or churches thus associated with a group of dwellings constructed in the ancient native manner, we were warranted in concluding that a group of Christian remains of an earlier type than this was not likely to be discovered. Proceeding to describe three groups of ecclesiastical remains in Ireland possessing this typical character, Mr. Anderson began with Skellig Mhihael, which, he said, presented beehive huts, associated with rectangular buildings, the whole enclosed with a wall. There were five beehive cells of uncemented and unhewn masonry. They were circular and oval on ground plan, but quadrangular internally, and the walls, after rising vertically for 7 ft. or 8 ft., then converged, each stone projecting further inwards than the one below, till, at the height of 16 ft. 6 in., the roughly domical roof was finished with a small aperture, which might be covered with a single stone. The doorway was small, and over it was a small aperture, like a window. There were two other structures of unhewn and uncemented stones, which differed in being rectangular externally as well as internally. One of these had walls 4 ft. 8 in. thick, which rose vertically to the height of 8 ft., before passing into the form of a flat dome. The doorway, 4 ft. 10 in. high, and 3 ft. 8 in. wide, had inclined sides, this characteristic being a constant feature in those early structures. There was one small window in the centre of the east end, broader than it was high. The features in which this structure differed from the oval-shaped cells were its quadrangular form on the ground-plan, its having an east window with a slight internal splay, its having the doorway placed in the west end, and having the remains of an altar platform under the east window. There was no difficulty in concluding from those features that this was an oratory or church, and not a cell or residence. The second oratory stood a little apart from the main group, and was, in the main, a repetition of what had been described. There was also associated with this group of early buildings the larger church of St. Michael, a lime-built structure, with walls of roughly-dressed stones, doorway in the south wall, with jambs of dressed stones, and window with round head cut out of a single stone. This must be placed in order of time after the two dry-built oratories. There was no historic evidence by which a precise date could be assigned to any portion of those remains. There were incidental notices in the annals from which the existence of an ecclesiastical settlement on the Skelleg might be inferred from 812 to 1044. But it was no part of the function of archæology to determine the dates of those specimens. What it did was simply to classify them according to their types, and determine the relative sequence of those types. Whatever might be the precise date of this group, it was clear, from the characteristics described, that it presented a form of structure not indigenous, associated with dwellings constructed in the ancient native manner, and surrounded by a rath. It was thus a composite group of a special type, of which it might be concluded that no earlier was likely to be discovered, because it embraced forms and characteristics which partly belonged to Christian and partly to Pagan times; and thus marked the transition from one to the other. The similar group of Ardoilean was next described, its oratory being characterised as one of the rudest of the early churches of Ireland; and in regard to the third group, that of Inismuredach, it was mentioned, among other things, that the enclosing wall had chambers formed in its thickness. From the consideration of the details of all three groups, the lecturer went on to say, it was to be gathered that the characteristic features of the earliest type of Christian remains in Ireland were:—(1.) That they existed as composite groups, comprising one or more churches or oratories placed in association with monastic dwellings, consisting of dry-built cells of beehive shape, and the whole settlement being enclosed within a rampart of uncemented stone. (2.) That the churches or oratories found in this association were invariably of small size and rude construction. (3.) That whether they were lime-built with perpendicular walls, or dry-built like the dwellings, they were always rectangular on the ground-plan, and single-chambered. (4.) They had always a west door and an east window over the altar. It could not be doubted that if such was the character of structure in use in the parent Church, the same style of buildings, the same forms of huts and churches, and same assemblage of both within a fortified inclosure, must have prevailed in the period of the planting of the Christian Church in Scotland. He could not point to a single example in Scotland so completely typical as those described; but if he were to conclude that such groups never existed, he should commit the common mistake of drawing, from mere ignorance of the facts, a conclusion which could only be legitimately drawn from complete knowledge. He rather inclined to the opinion, founded on his knowledge of how very little was known of the real character of the vast majority of the great stone cashels and earthen raths of Scotland, that there might yet be found some which exhibited distinct and complete evidence of this Christian character. In Scotland, as in Ireland, it was only on the smaller, uninhabited, inaccessible islands that traces of such structures were to be found. The first of three groups selected for description was that of Loch Columcille, in Skye. The remains here, the lecturer said, were so ruined that it was difficult to determine their features with certainty. There was a cashel of stone enclosing traces of cells, which it was thought had probably been covered with beehive vaulting; also an oblong building whose remains were so indistinct that it was impossible to determine its character. Under these circumstances it was hazardous to venture on definite conclusions; but, as far as he was able to judge, the general features of the remains appeared to have been those which the analogy of the Irish groups taught one to look for in the monastic settlements of the early Christian time. There was not evidence sufficient to attribute the remains to the time of St. Columba, though they continued to retain the association of his name; but although the buildings might not have been erected in Columba's time, they were apparently of the earliest type, and might, therefore, be among the very earliest remains of ecclesiastical origin now in Scotland. A second group, that of Eilan Naomh, close to which was a spring called Columba's well, showed a small church or oratory, associated with beehive cells of uncemented masonry. A detailed description was given of these remains, which the lecturer pronounced to be of the typical character of the early monasteries in Ireland; at the same time reminding his hearers that that type might have ranged through four or five centuries, and that, without the assistance of definite records or dated characteristics, it was impossible to say to which of those centuries any specimen belonged. Passing next to a group at Deerness, he gave an account of a small oblong church with lime-built walls, doorway in the west end, window in the east end, and scattered round this the remains of a number of cells. This settlement, he said, was protected by a stone cashel; there was a well close by the church, and up to the sixteenth century the place had still such a reputation for sanctity that at certain seasons people of all classes and conditions climbed to the top of the rock on hands and knees to offer their supplications. In this case, again, the remains were declared to be of the type of the earliest Christian settlements. The three groups which had been mentioned, therefore, offered examples of the earliest type of Christian architecture in Scotland, belonging to the time when the church was monastic, and consisted of little colonies of ecclesiastics, sheltered within the rath of a friendly chief, or planted on lonely islands. But besides these, there was another class of structures which also belonged to the earliest type, though not occurring in such association as to warrant their being called monastic. Reference was made to the isolated churches or oratories on Rona, Suleskerry, and the Hannan Isles; and the lecturer, in summing up his remarks, said there might be difficulty, in certain circumstances, in determining whether a dry-built beehive structure in the Western Isles might be ancient or recent; but he had made it clear that no such difficulty existed in regard to the determination of type. Proper conclusions regarding the ancientness or recentness of any particular example could only be reached when special evidence in the nature of record or testimony existed. In regard to those composite groups, he said that he knew of no other type of earlier construction existing in Scotland; but he did not say of the existing specimens that they were the earliest that ever existed, or that the types he had described were the only types of Christian buildings that had existed. It was known from the writings of Bede that it was not uncommon for the Scottish monasteries to be constructed of wood; but, in the absence of remains, the wooden type of structure affected the archæological investigation no more than any other historical fact which was admitted as established on the credible testimony of contemporary writers. From the point now reached a survey might be taken of the phases of advancement exhibited by ecclesiastical structures. There was first the rude, unadorned type, consisting of a single chamber, and having but one door and one window. Of this there were two varieties,—one constructed without cementing material, the other built with mortar. Then there was the more complex type, consisting of nave and chancel, of which there were found such varieties as that in which the chancel was not bonded into the nave, marking the transition from the single to the double chambered form; that in which there was no chancel arch, the opening into the nave differing in no respect from the doorway: that in which the end of the vault of the chancel-roof opened directly into the nave; and that which showed the chancel-arch along with other features which linked it with the current architecture of the twelfth century. Again, it had been seen that the earliest churches of Scotland, while partaking of the structural features of Pagan buildings, differed in the important elements of angularity and regularity of form, in having a west doorway, an east window, and an altar platform. The type also differed from those forms of early church structure which were common in Europe, and was therefore a form peculiar to a special area. The Roman or European type was basilican in form, having its east end constructed in a rounded apse. In Ireland and Scotland, on the other hand, the earliest churches were not basilican in form, but were invariably small, oblong buildings, with square ends and high-pitched roofs. No example of an apsidal termination existed, and, whatever might be the secret of their derivation, they were certainly not built after the Roman manner. Their special features were extreme rudeness of construction, extreme simplicity of form, insignificance of dimensions, and total absence of ornament or refinement of detail. If, however, he inferred that their uniformity of plan implied deficiency of inventive power, or that the absence of decoration implied inability to contrive or appreciate it, he should be drawing conclusions destitute of relevant evidence.

In his fourth lecture, Mr. Anderson spoke of existing relics of the early Celtic church, beginning with an account of the Book of Deer and other remarkable illuminated MSS., quoting from them in support of his views as to the architecture of the period, and observing that the quality of the culture disclosed in those valuable relics showed how greatly we in the present day should err if we relied on structural remains alone as indications of culture. The men who produced this art, although they might have lived in beehive houses, and worshipped in churches scarcely more refined in appearance or architectural in structure, were not destitute of that varied culture which was literary and artistic in its character. On the contrary, they were men of such acquirements and taste that they multiplied their books laboriously, and counted it a virtue to be diligent in doing so; that the skill they thus acquired enabled them to produce MS. volumes written with a faultless regularity and precision of character rivalling the best caligraphy of the most literary nations, which they adorned with illuminations of exquisite beauty and intricacy of design, and enclosed in cases enriched with the costliest

workmanship in gold and silver, and set with precious stones.

The fifth lecture of the course was delivered on the 28th ult., when Mr. Anderson continued to treat of existing relics of the early Celtic church, especially of bells. He described several notable specimens of early bells, remarking that they, in common with other relics of the period, afforded abundant evidence of the technical skill and artistic ability of a time whose every work bore the stamp of that earnestness of purpose and concentration of energy which always accompanied a mind inspired by genuine devotion to the work for the work's own sake.

The sixth and concluding lecture of this interesting series was delivered on the 30th ult., Mr. Anderson resuming his account of existing relics of the early Celtic church, including the croziers of St. Fillan and St. Columba. In conclusion, the lecturer said that he and his audience had traced the types of the early churches back to a type truly primitive in form and construction; they had seen that the dwellings of the founders were beehive cells or wattled huts, as mean in character and rude in construction as could be imagined; yet that their occupants were men exhibiting a quality of culture and form of civilisation which it might be difficult for the present generation to estimate at their true value in relation to their own, but which could not be spoken of in terms of disparagement. The relics of that culture still extant exhibited a feeling for decorative art, a faculty of design and skill in the technical processes of art workmanship, which had seldom been surpassed; and in all the productions which had come under notice, whether rude or refined, they had marked the presence of features and characteristics peculiar to this special area, because they were the expression of the individuality of the Celtic character. Throughout the course of lectures just closed, the features and characteristics which marked that individuality of character had been for the most part common to Scotland and Ireland. In the next course it would be his duty to deal with objects and classes of objects which exhibited, in a still more distinctive manner, features and characteristics which were the expression of an individuality of character developed on the soil of Scotland itself.

THE NEW ROYAL INFIRMARY, EDINBURGH.

These extensive and important buildings, which have been erected and furnished at a total cost of about 350,000*l.* (including the site), were formally opened by the Lord Provost on the 29th ult. Nine years ago, in our volume for 1870 (pp. 1006–1007), we published a view and plans of the buildings, of which the late Mr. David Bryce, R.S.A., was the architect. The old infirmary, established about a century and a half ago, had but small beginnings, but the demand for its beneficent work was so great that the premises had to be extended from time to time to meet growing needs, absorbing the old High School building. As will be inferred, the buildings were for the most part old and unsuited to the exigencies of medical science in the present day; and it being felt that the patients did not get so fair a chance of recovery, nor the doctors so good a field for the successful exercise of their curative skill as they would have had in better buildings, a few years ago the question of rebuilding the Infirmary came to the front. The immediate rebuilding of the Medical School was at first recommended, the intention then being that the hospital should remain on the same site, with such extension as would be secured by the removal of the houses in South Bridge, opposite the University. This scheme being adopted by the contributors, a public subscription, energetically promoted by Mr. T. J. Boyd (the present Lord Provost), and Mr., now Bailey, Colston, was put in train, to secure the necessary funds. The subscription list soon showed a total of 75,000*l.*; and the managers had begun to take steps for acquiring the necessary property in South Bridge, when a new complexion was given to the movement through the action of the late Professor Syme, who urged that the opportunity should be taken advantage of to have the whole Infirmary rebuilt on a thoroughly satisfactory scale. After a great deal of discussion, the managers recognised the expediency of yielding to the proposals made by Professor Syme and others. The governors of Watson's Hospital, then taking action under the Endowed Institutions Act, were found willing to dispose of their property, and the necessary consent to a change of plan having been obtained from the Infirmary contributors and the subscribers to the building fund, the late Mr. D. Bryce, R.S.A., was, as already stated, entrusted with the planning of the buildings, of which his nephew and partner, Mr. John Bryce, has superintended the completion.

In framing his design, the architect (says the *Scotsman*, in the course of a long description of the building published on the occasion of the opening), was guided, by the results of recent hospital experience, to the adoption of the pavilion system of planning. The site purchased has an area of 11½ acres—the original purchase of the Watson grounds having been supplemented by the acquisition of Wharton-place,— but only 3½ acres are actually occupied with buildings. The style adopted is the old Scottish baronial, its characteristic features being, of course, most completely developed in the main frontage, which, in accordance with the requirements of the site, has been turned to the important thoroughfare of Lauriston. This façade presents a central elevation 100 ft. long, with height of three stories, in addition to a half-sunk basement. A leading feature here is a tower, which, buttressed at either angle, projects slightly from the general line of the block and has its base pierced by the main entrance. Near the top the tower wall is corbelled outwards, and over it there springs a slated octagonal spire, terminating at a height of 134 ft. from the ground in a vane and weathercock. From each side of this central building, which is partly appropriated as administrative accommodation, there run out, in the same line, three tiers of corridors, giving access to the wards of the surgical hospital, and offering, in the front view, as many ranges of large three-light windows, surmounted by a stone balustrade. These corridors, measuring each 12 ft. wide by 15 ft. high, are continued from end to end of the buildings, and on the north side there are carried out at right angles towards Lauriston four pavilions, or blocks of wards, severally measuring 128 ft. in length, with an extreme width of 33 ft. 2 in. Each pavilion reaches to within about 30 ft. or 40 ft. of the thoroughfare, to which it presents, as a notable feature of the frontage, a crow-stepped gable, flanked with round towers, and having on each of its three floors two square-headed windows and a doorway, also glazed, which opens upon a stone balcony. In their side elevations, the several pavilions show ranges of plain windows, the walls being relieved with string-courses and diversified at the top with stepped gables, small turrets, and chimneys characteristic of the style. The masonry throughout is substantial ashlar, with tooled facings to doors, windows, and gable-heads. Of the four north pavilions mentioned, that at the east end of the frontage is separated from the one next in order by a space of 88 ft., open on the side next Lauriston, but closed on the opposite side by the connecting corridors, from which there projects into it a small one-story building, intended as a meeting-room for students. Between the second and third pavilions comes the central court, or carriage approach to the main entrance, which has a width of 158 ft., and between the third and fourth a second space of 88 ft., with corridors at the back as before, and a small projecting building corresponding to that in the other wing, to be occupied as a female accident ward. On the south side of the main corridors, again, there are two pavilions running southward, their inner ends coming nearly opposite the vacant interspaces of the two northern pairs. Between these there come in two class-rooms, likewise entered from the main corridor, as also an operating theatre in rear of the central block, and immediately to the south of this, the old buildings of Watson's Hospital, remodelled so as to be available for administrative purposes. The Surgical Hospital, with its adjuncts, thus forms a pile of buildings extending in its main frontage to 480 ft. A space, 195 ft. wide where narrowest, traversed by a covered way, with open gallery on top, separates the surgical and administrative departments from the Medical Hospital, which occupies the lower portion of the ground nearest the Meadows. The arrangement here is of the simplest. Four pavilions range north and south, and stand parallel to each other at distances of 100 ft. or 112 ft., repeating the architectural features of the pavilions already described. The pavilions here are somewhat longer than those of the Surgical House, measuring, as they do, 173 ft. 6 in.; but their width is the same; and so is their position with reference to the points of the compass, that having been adjusted with the view of getting the benefit of both morning and afternoon sun. Each block embraces, besides basement and attics, three extensive floors, and every floor constitutes a ward, complete in itself, and capable, if necessary, of being isolated and worked independently of the rest of the hospital. To secure at once durability and imperviousness to germs of disease, the walls of the wards are plastered with cement and faced with parian; while the floors are constructed of pitch pine, varnished. On either side of each ward is a range of windows, their upper sashes hung upon central pivots, so as to be readily opened for ventilation. Between the windows are placed the bedsteads, their centres 9 ft. apart. The heating is by four open fireplaces, it being deemed undesirable to extend to the wards the system of steam piping employed to keep up the temperature of the corridors. Galton grates are largely used, with the view of getting the full benefit of the fires. Apertures here and there, close to the floor, admit fresh air direct from the outside; while under each bed is an opening communicating with an extracting flue, carried up through the wall to one of the ventilating towers, where a warm-water cistern, connected with the heating apparatus, is expected to produce the necessary updraught. The gas-burners, of which there is one to each bed, are fitted with hoods through which the vitiated products of combustion may pass out of the ward.

The group of buildings devoted to the Pathological Department is situated at the north-west corner of the grounds, standing somewhat apart from the Infirmary proper, having a frontage to Lauriston of 120 ft., and constructed in a somewhat plainer style, but so as to harmonise with the general character of the design. The leading feature of this series of buildings is a spacious lecture-theatre, with sitting-room for 220 students, and having the necessary adjuncts of microscope-room, chemistry-room, &c. Near by is a mortuary, lined with white glazed bricks, which communicates with the medical and surgical hospitals by means of an underground passage, so that the bodies of deceased patients may be removed without unnecessarily attracting observation. Another building contains the washing-house, to which soiled linen will be conveyed through the tunnel, and where it will be dealt with by means of a steam-driven washer, a mechanical wringer, and hot-air drying-chamber. Here, too, is the boiler-house, where provision is made for working the heating apparatus and the hydraulic machinery of the lifts. A commodious residence for the superintendent, harmonising in style with the Infirmary buildings, has been erected near the Meadow Walk, immediately in rear of the surgical house.

In regard to the accommodation for patients provided in the new institution, it may be mentioned that of the eighteen wards in the surgical pavilions, there are about fifteen which, including private beds, will each accommodate sixteen patients. The medical house comprises twelve wards, each capable of receiving twenty-one, or, counting private beds, twenty-three patients. Adding the accident, ophthalmic, D. T., and students' wards, together with the numerous reserved beds, for which space will be found in other apartments, there comes out a total of about 600, or 140 over the daily average of patients treated last year in the old Infirmary. The amount of space provided for each patient varies from 2,350 to 2,380 cubic feet, as compared with 1,800 cubic feet allowed in St. Thomas's Hospital, London, and 1,226 cubic feet in Fort Warren, Massachusetts.

The contractors for the masonry, carpentry, and joinery work were Messrs. W. Beattie & Sons; plaster work, Mr. James Annan; slater work, Messrs. Anderson & Son; plumber work, Mr. Carstairs and Messrs. Barton & Sons; heating apparatus, &c., Mr. Purnell, Glasgow. The time specified for the completion of Messrs. Beattie's contract was the 31st December next. They can claim the credit of having considerably anticipated it.

Aylesbury.—Sir N. M. de Rothschild, bart., M.P., is about to present a new Literary and Scientific Institute to Aylesbury.

BUILDERS' BENEVOLENT INSTITUTION.

ANNUAL DINNER.

The thirty-second anniversary festival in aid of the funds of this Institution was held at the Freemasons' Tavern, Great Queen-street, on Thursday, the 6th inst., Mr. F. J. Dove, president, in the chair.

The usual loyal and patriotic toasts were duly honoured, the President, in proposing the health of the Prince of Wales, expressing the hope that His Royal Highness would, on some future occasion, be willing to preside over the annual festival of so important a charity as the Builders' Benevolent Institution. The secretary, Major Brutton, responded for the "Army and Navy," and Captain Bird for "The Reserve Forces."

The Chairman, in proposing the toast of the evening, "Prosperity to the Builders' Benevolent Institution," said that the Institution had now been established for thirty-two years, and during that period it had granted pensions to one hundred poor men and their wives. All those pensioners had now passed away, but the Institution had at present fifty other pensioners on its books. The Institution had now an accumulated fund of 20,700*l.*, the interest of which sum, supplemented by the donations obtained at the annual dinner, and by the annual subscriptions, was appropriated in payment of the pensions. The necessity for such a benevolent institution as that on whose behalf he was pleading was becoming increasingly felt from year to year. The building trade was one which had for many years been absorbing many trades which, thanks to the spread of sanitary knowledge through the labours of such men as Dr. Richardson, had now become essential for the erection of healthy dwellings. Architects now specified the adoption of more or less complicated sanitary appliances, and accordingly upon the builder there devolved a great deal of responsibility in connexion with such matters,—a responsibility which was leading to the absorption, by the building trade proper, of the special trades concerned in the manufacture and erection of such appliances. Besides this, the risks undertaken by builders in carrying out their works were constantly on the increase,—risks of party-walls, risks of adjoining owners, risks of life and limb, risks of settlement, and, in fact, risks of every conceivable kind. The builder had also difficulties in dealing with his workmen, with the building owner, with the architect, and with the district surveyor; and finally, when he had completed his work, he perhaps had a great deal of difficulty in obtaining the money for it. The last difficulty added to the others induced in some men a mental strain which prevented them devoting due energy to their business, which, under such circumstances, too often became a ruin and a wreck. The rapid growth of the building trade had been attended with great and sometimes bitter competition, and such competition too often ended in disaster. True it was that many men who had made colossal fortunes in trade competition had nobly come forward to help the Builders' Benevolent Institution in providing in some measure for the wants of those who had been so unfortunate in the struggle for existence as to be suppliants at the threshhold of the Institution. Now the pension granted by the Institution to men was 30*l.* per annum, which was not sufficient to provide for the wants of a man and his wife, but had to be supplemented in many cases by the doles of friends. He was of opinion that it would be a grand thing if, by the co-operation of the trade, the amount of the pension could be raised to 50*l.* He felt sure that by a vigorous effort it could be done, and although he was only speaking his own sentiments, for which the committee were not responsible, he felt quite sure that if the committee were provided with the necessary augmentation of means, they would be only too happy to increase the pension to 50*l.* Few in that company, however wealthy, knew how long it might be before, by some fortuitous combination of adverse circumstances, they might be overtaken by misfortune, and placed in a position to need the help of the Institution. Therefore, he said to all,—"While you are in a position to help, lend your help, and that most heartily."

The toast was enthusiastically received.

Mr. H. G. Smith proposed the next toast, "The Chairman and President," and said he regretted that Mr. Plucknett, the respected treasurer of the Institution, was not present to propose this toast, as was his wont. Mr. Dove had shown by his words that he had the interests of the Institution at heart, and he (Mr. Smith) felt sure that Mr. Dove would use what energy he had given to him for the benefit of the institution.

Mr. Dove briefly responded.

Mr. T. F. Rider proposed the next toast, "The Vice-Presidents and Trustees," and referred in eulogistic terms to the services rendered by those gentlemen. With the toast he coupled the name of Mr. Freeman, one of the vice-presidents, who responded.

Mr. Conder, in proposing the next toast, "The Treasurer," Mr. George Plucknett, said that Mr. Plucknett had been identified with the Institution since its foundation, and he believed had never been absent from the annual dinner until the present occasion. He was sure the company would all deeply regret the fact that ill-health prevented Mr. Plucknett's presence that evening, and would join in the expression of the hope that he would soon be speedily restored to health. He had been treasurer of the Institution for more than twenty years, and was, as everybody knew, most zealous in promoting the interests of the charity.

The toast was very enthusiastically received, and responded to on behalf of Mr. Plucknett by Major Brutton, the secretary, who announced subscriptions and donations to the amount of 859*l.* 0*s.* 6*d.* Of this sum 424*l.* 15*s.* 6*d.* figured on the list of the chairman, who personally gave 52*l.* 10*s.*; Messrs. Dove Brothers gave 52*l.* 10*s.*; Mr. H. J. Dove, 21*l.*; and Miss Dove, 10*l.* 10*s.*

The Chairman, in proposing the next toast, "The Architects and Surveyors," referred to the progress of modern architecture, observing that English architects, at any rate, were able to hold their own even in competition with foreign architects. With "The Architects," he begged to associate the name of Mr. Francis, joint architect of the Grand Hotel, Charing-cross. To the surveyors, architects and builders were equally indebted, for when they had managed to get their accounts into apparently inextricable confusion, the surveyor was called in to put things right. With "The Surveyors" he coupled the name of Mr. Franklin.

Mr. Francis, in responding, said he was always prepared for something amiable as well as clever from their excellent President, and the way in which he had spoken of the architectural profession entitled him to the thanks and esteem of all who were architects. There was every reason why there should be the best of understandings between architects and builders. The conceptions of the architect were of very little value until realised by the practical skill, energy, and enterprise of the builder,—and he was afraid he must say that some very impracticable suggestions put upon paper in architects' offices had to be very considerably "licked into shape" (if he might use the expression) by the builders. Personally, he did not think he had ever had business relations with any firm which had ended in better results than those in which he had been concerned with the firm with which Mr. Dove was identified. Mr. Dove was one of the most esteemed and popular men amongst the builders of the metropolis. It was, as he had said, very important that builders and architects should work together. Of course there were times when things were rather rough. There were several matters which were the subject of debate between architects and builders, such as "quantities," "day-accounts," and "extras," but it was pleasant to know that in the midst of the discussion of those distracting topics, architects and builders were able to meet round that hospitable board on terms of friendship. He hoped that state of things would continue. To get on well together, the architects and builders of the metropolis must work in harmonious concord. If the builders, on the one hand, would keep their day-accounts down, and if the architects, on the other hand, would refrain from adopting what was called the "skin-flint" policy, they would continue to get on together very well indeed.

Mr. Franklin replied in the name of the surveyors.

The remaining toasts were, "The Committee and Stewards," proposed by Mr. Colls and responded to by Mr. T. G. Smith; and "The Ladies," proposed by Mr. Conder, and responded to by Mr. T. F. Rider, who truly observed that had the ventilation of the hall been more satisfactory the toasts would have been more cool-ly, though not less enthusiastically, received.

The gathering was a very successful one.

NEW PUBLIC BUILDINGS AT READING.

On the 3rd inst. the Earl of Carnarvon laid the memorial stone of the new Town-hall, Free Library, Museum, and Schools of Science and Art which are now in course of erection in Blagrave-street. The Town-hall, Free Library, and Museum will front to Blagrave-street, and the Schools of Science and Art to Valpy-street. The style is an adaptation of the French Gothic, and the new buildings will exteriorly accord in colour and general appearance with the existing buildings.* On the Blagrave-street frontage will be a series of sculptured stone panels, illustrative of incidents in the history of Reading. The entrance to the Town-hall is placed near the centre of the façade, and the entrance to the Library and Museum at its northern end. The Town-hall is reached by a stone staircase 20 ft. in width, communicating with a corridor 15 ft. in width, and 78 ft. in length. This corridor communicates at its southern end with the corridor of the present building at the same level. The hall is 97 ft. in length, 60 ft. in width, and 50 ft. in height. There will be balconies on three sides of the hall. These balconies will be supported by cantilevers. The hall will be lighted through a deep cove running all round the hall immediately under the ceiling line. The style of decoration to be employed in the interior of the hall will be that of the Renaissance, colour being sparingly used. Under the orchestra-staging are ladies' and gentlemen's dressing-rooms, lavatories, &c. Adjoining the dressing-rooms, on level of basement, is a supper-room, 20 ft. by 60 ft. The whole of the remaining area under the hall floor will be available for storage. On the west side of the corridor are, first, a committee-room, 21 ft. by 26 ft., next, ladies' and gentlemen's cloak-rooms and lavatories. Under these rooms are medical officer's room, waiting-room, and rooms for storage purposes. The whole of these rooms on both floors may be reached from the corridors of both old and new buildings. The Free Library is reached from the north end of the Blagrave-street façade, the floor being 3 ft. above the level of the footway. The floor area of the library is 2,700 superficial feet, with a clear height of 20 ft., divided by glass screens into reading-room, ladies', and reference-rooms, and library and librarian's room. The Museum, which occupies the whole length of the Blagrave-street façade, is reached from the same entrance by a broad stone staircase. The floor area is 3,380 superficial feet, divided into two museums, each having a height in centre of width of 23 ft. The central and back portions of both rooms will be lighted from the roof. The Schools of Science and Art are entered from Valpy-street, and contain kitchen and scullery for the school of cookery (this kitchen will be connected by a passage-way with the Town-hall, so that it may be used in case of banquets, &c.), two large laboratories (one for elementary and one for advanced students), eight class-rooms, including one specially arranged for drawing from life or life-sized casts, master's room, and ladies' and gentlemen's cloak-rooms and lavatories. The class-rooms are all lofty, and have, exclusive of the lavatories, a floor area of 5,700 superficial feet. The heating will be generally by hot-water, but some of the class-rooms will be warmed by open fires. In the matter of ventilation, fresh air will be continuously introduced by down-cast and other shafts and arrangements, and the vitiated air extracted by Boyle's self-acting suction air-pump. The buildings will cost about 46,000*l.* Mr. Thomas Lainson, of Brighton, is the architect, and Mr. Chappell is the builder.

Durham Baths and Wash-houses.—On the 4th inst. the mayor formally re-opened the Durham baths and wash-houses, which have been closed for alteration and repairs since last May, under the direction of the City surveyor, Mr. De Normanville. The first-class swimming-bath has been lined with Minton's white enamelled tiles, and the sides of the second-class plunge-baths are lined in a similar way. The first-class bath will be warmed with steam-pipes, so that it can be used in the winter season. Both swimming-baths are covered with open roofs of wood and iron combined. The work has been carried out at a cost of nearly 3,000*l.*

* Designed by and erected under the superintendence of Mr. Waterhouse, A.R.A., and illustrated in the *Builder* vol. xxxv. (1877), p. 109.

A FREE SCHOOL OF ART FOR GIRLS.

SIR,—As you kindly inserted my letter on the necessity of a "National Free School of Art and Industrial Art for Girls" (p. 1156, *ante*), the furtherance of which scheme is an object I feel deeply interested in, I venture to claim your indulgence again and yet again, as I feel confident that in the course of time something will be done if the proposition be well brought before the public. I have been reading a very interesting book on the "Balearic Isles," by Mr. Charles Toll Bidwell, H.M.S. Consul at Puerto Rico, but who was previously Consul at the Balearic Isles for some years.

After a very lively account of these islands, manners, customs, and so on, Mr. Bidwell devotes a chapter to the fine arts, and it is with no little interest I find that something of the plan I have suggested is already carried out there, and is working well. The chapter is so interesting that if I may so far trespass on your space, I will give the pith of it. It relates to the Fine Art School of Palma. By a curious coincidence, Mr. Bidwell says, there exists in Spain the same number of Government fine-art schools as in Italy; there are thirteen of such schools under the charge of the State in Italy, and, with the exception of the Superior Academy of Fine Arts in San Fernando, there are also thirteen fine-art schools in Spain. Amongst the Spanish academies, that of Palma now occupies, from the number of its pupils as compared with the population, a very remarkable position. The study of fine art in the Balearic Islands in *all branches* has of late been much cultivated, but more especially in such as may be applied to industry. Drawing applied to arts and to industrial pursuits is now studied there on a scale that compares in a noteworthy manner even with that of the well-subsidised schools of Italy; and the development of this pursuit is more praiseworthy, as the result is attained at a cost comparatively insignificant. From the data lately published, it appears that the Academy of Palma enjoys a grant of only 13,750 francs (550*l.*) for professors, and 6,125 francs (245*l.*) for material, &c., which is all its revenue, and with which modest stipend the five classes required in the Government instruction are sustained, in addition to three higher ones. There are no fewer than 425 matriculated students (this was in February, 1875). The distribution, when these numbers reached 397, was: Class of arithmetic and geometry, 83; figure drawing, 88; lineal drawing, 100; ornament, 51; arts and building, 27; landscape and perspective, 29; drawing from antiquities, 11; drawing from nature and living models, 8.

Of these 397 pupils, 136 thus attended the classes of "application drawing." It would hence appear that more than two-thirds of the pupils dedicate themselves to drawing applicable to industry, as the foundation of their profession as artisans and architects.

Mr. Bidwell continues,—"Don Juan O'Neille called attention in an interesting paper to the remarkable fact that the Academy of Milan, which owes its prosperity to the prominent place given therein to industrial drawing, is the only Italian school that numbered on its matricula more than 1,000 students, while the rest of the Italian schools numbered less than that of Palma. Thus Turin numbers 394; Naples, 357; Rome, 290; Modena, 289; Bologna, 255; Florence, 205; Marsa, 70 (these figures are taken from *La Italia Economica*). The expenses of these thirteen Italian schools (year 1872-3) amounted to 700,201 francs, which apportioned amongst them would give upwards of 53,000 francs to each (2,120*l.*). The school of Palma, with 425 matriculated students, costs, as we have seen, only 19,870 francs, or little more than a third of the above average.

The attendance at the Palma Academy *is free of charge to the pupils*. The classes are held daily in the evening during the term, from the 1st of October to the 31st of May. The professors, in several instances young men, natives of the island, who,—for the most part with small available resources,—have, with praiseworthy industry and application, developed the natural artistic talent common to these islanders. They have acquired in competition the honourable position they occupy, and when one sees the excellent work of some of them, one may be led to believe that, in a larger sphere of action, their abilities would find a still higher appreciation.

Amongst the more prominent of the young Majorcan artists is Señor Rebas, whose charming landscape gained a first prize at the Vienna International Exhibition, and the remarkable etchings and drawings of Señor Maura are too well known abroad to require attention to be called to them."

This account seems to me encouraging, and if that little Spanish island, lapped by the waves of the blue Mediterranean, can carry out for men, without cost to them, so vitally useful a plan, so simply and so judiciously, surely in *this* island, on whose possessions the sun never sets, and some of whose inhabitants possess almost fabulous wealth, a movement may be looked for to provide an institution offering similar advantages to the girls and women of England.

C. S.

THE THAMES NAVIGATION AND THE SEWAGE OUTFALLS.

AN inquiry as to the effect which the discharge of the metropolitan sewage into the Thames at its present northern and southern outfalls has had upon the navigation of the river was commenced on the 4th inst. in the hall of the Institution of Surveyors, Westminster, before Sir C. Hartley, the umpire appointed by the Board of Trade; Captain Douglas Galton, C.E., the arbitrator appointed by the Thames Conservancy; and Mr. Bramwell, C.E., the arbitrator nominated by the Metropolitan Board of Works.

Mr. Pope, Q.C., and Mr. Theodore Aston, Q.C., were counsel for the Thames Conservancy; Mr. Bidder, Q.C., Mr. Michael, Q.C., and Mr. Edward Clarke represented the Metropolitan Board of Works.

The inquiry was stated by Mr. Pope to be the outcome of a long correspondence which has been going on between the parties to the arbitration for several years, and the claim of the Thames Conservancy is based upon the 20th and 21st sections of the Thames Navigation Act of 1870, which provided that any banks or other obstructions of the navigation of the river which might arise from the discharge into it of the sewage of London must be removed at the expense of the Metropolitan Board. This, Mr. Pope remarked, was entirely apart from any question of pollution of the river in a sanitary point of view, and the inquiry would, therefore, be limited to the question of navigation. And by a further provision of the Act the result of the arbitration would not be given by the tribunal in the nature of an award, but would be sent in to the Board of Trade as a report, to be acted upon by them as they thought fit, and upon which they would determine, if they were of opinion that any obstruction had arisen partly from the outfall of sewage and partly from other causes, how far the expense of the removal of the deposits should be borne by the Metropolitan Board of Works and how far by the Conservancy Board. A question had been raised whether these particular banks were or were not considered to be obstructions by skilful navigators of the river; but the Thames Conservancy contended that under the construction of this Act all banks in the river caused by the outfall of sewage were to be regarded as obstructions. No matter whether there was a passage in a certain part which would accommodate vessels of a deep draught, a bank in any other portion which would interfere with the tacking of sailing vessels was equally an obstruction with any deposit that might be caused in the deep channel. The duty of the Metropolitan Board was declared by the Act of Parliament to be to "keep the navigation free from such banks, or other obstructions, as have arisen or may arise" from that cause. Mr. Pope traced the history of the Conservancy Board, and pointed out that while they had powers to prevent rubbish and sewage being thrown into the Thames, and to cause the surface of the river, as far as practicable, to be effectually scavenged with a view to the removal therefrom of substances liable to putrefaction, the rights of the Metropolitan Board to provide for the sewage of London were maintained subject to the restrictions already alluded to. Soon after the final opening of the northern and and southern outlets of the sewers in 1865, the Conservancy Board became alive to the fact that large deposits, which during their whole previous experience of the river had not occurred, had begun to accumulate in the neighbourhood of the outfalls. The first point in the evidence as to these banks being caused by the sewage was coincidence in point of time. Prior to 1861 there had been an increase in the depth of the river between Galleons Reach and Halfway Reach, and the bed of the river was so clean that the Trinity House dredger turned out quite clean gravel; but between then and 1868, according to the engineers of the Conservancy, very extensive shoals had been formed in the bed of the river near the outfalls (threatening seriously to endanger the navigation), which would entail an expense of 52,000*l.*, and an annual outlay of 13,500*l.* to keep the river free from obstruction, if the discharge of sewage was continued at its present rate, and a large outlay would probably be necessary to obtain land on which to deposit the material raised by dredging. Dr. Letheby reported that these deposits were sewage; but this did not necessarily imply fœcal matter only, but the whole of the substances resulting from street attrition or other causes, which found their way into the sewers and were ejected into the Thames, though they did not pollute the stream in a sanitary sense. Another point of the Conservators was, therefore, that the composition of the banks itself pointed to their origin, and that they should be removed at the expense of the parties causing them. The three banks of which the Conservators asked the present tribunal to take cognisance were, one immediately opposite the southern outfall; one in the slack water a little to the seaward of Barking Creek; and a third, not so large, but increasing, on the opposite side of Barking Creek, by Margaret-ness. There were other banks of less magnitude at Erith and St. Thomas's Hospital, and in other parts of the river, but unless the counsel for the Metropolitan Board called attention to them, he should not ask the arbitrators to make any report upon them. From 1870 to 1874 there were other reports from the engineers showing that there had been deposits of 240,000 cubic feet over a length of three-quarters of a mile of the river, in addition to the deposit previously complained of; and a further point which the Conservancy urged was, that these deposits were not of a uniform depth all over the river, but were such as would naturally be expected from an influx of matter from the very places where the outfalls were situated, and that they were carried by the ebb and flow of the tide and deposited in the places where the slack-water allowed them to precipitate. One of the alternative views taken to account for the formation of these banks was that the sea-water was heavily laden with "saltings," which were deposited there; and another was the mud and earth brought down stream from higher lands; but neither of these hypotheses would explain the fact of the concurrence of the formations in point of time, both of commencement and continuance, with the existence of the northern and southern sewage outfalls. It was also endeavoured to be shown by the Metropolitan Board that, so far from there having been a decreased depth of water, it had really been increased, but the fact was conveniently overlooked that what increase there had been was caused by dredging, and that these deposits were counteracting it; and that since the opening of the Crossness outfall the depth opposite to it had been reduced by 5 ft., and whereas there was formerly an anchorage there for twenty-four colliers, it was now unused, or nearly so. Evidence was called in support of Mr. Pope's statements and of certain diagrams and charts of the river which were put in, and the proceedings were adjourned.

The arbitrators and the umpire continued their labours on the 5th and 6th inst. Mr. More and Mr. Leach, the engineers of the Thames Conservancy, were examined at great length by Mr. Pope and Mr. T. Aston, as to the nature, shape, and formation of the three banks now existing near the northern and southern outfalls of the metropolitan main drainage. The effect of the evidence was, that these banks had been undoubtedly formed since the opening of the outfalls, and that, although the banks might be in the positions where it was probable that the dredging alterations of the bed of the river might have caused banks in any case to have been formed, the depcsit now existing there (in some cases to the depth of several feet) was unquestionably proved to be sewage by its mal-odour. Formerly, in these places, nothing was dredged but pure gravel, which is a marketable commodity, and which would be taken away by private enterprise: whereas this sewage-mud could not be moved except at considerable expense. It was stated that what led to the discovery of the existence of the mud-banks was the sticking fast of a vessel in 1867, at a

place where there was deep water and a gravel bottom in 1861. Again, in 1877, when a large steamer was sunk in Sea Reach, there was found to be a thick deposit of sewage-mud at a distance of twenty-four miles from the southern outfall. There had also been found to be deposits of mud opposite St. Thomas's Hospital, and between there and Chelsea, and these were attributed to the sewage taken up by the flood-tide. A statement put forward on behalf of the Metropolitan Board of Works that a million tons of earth were washed away annually from the "saltings" and other banks of the river was combated by the witnesses, who maintained that the conformation of the banks had not been altered in any such degree as would be necessary to account for so large a quantity being washed away. The witnesses were closely cross-examined by Mr. Bidder and Mr. Michael. They stated they had not found that any great washing away was going on in the upper reaches of the Thames; and that there was very little of the banks between Crossness and Teddington that yielded mud. A vast amount of mud was, however, churned up by steamers, and in the absence of land-water the sewage could be seen distinctly as far up as Richmond. An analysis and a report by Dr. Letheby, on samples of water taken at Woolwich, Greenwich, and London Bridge, were put in, and the result was stated to be that the amount of solid matter in suspension at the flood-tide was very nearly double that in suspension at the ebb-tide at those points, the argument being that a considerable quantity of mud must have been deposited somewhere up stream. But it was pointed out by Mr. Bidder that, in some cases, the water at flood-tide was found to contain more suspended solids at London Bridge than at Woolwich, and at ebb-tides to contain more at Woolwich and Greenwich than at London Bridge, the inference being that the mud was picked up by the tide somewhere between Woolwich and London Bridge, and could not, therefore, be attributable to the sewage outfalls lower down the river. The cross-examination on this point was not concluded. The umpire and arbitrators spent a great portion of the 6th inst. in inspecting the Thames between Galleons Point and Erith, in one of the Conservancy steamers. The inquiry was resumed on the 11th inst.

DÜSSELDORF EXHIBITION OF ART AND INDUSTRY IN 1880.

The erection of the extensive structure for the Exhibition of Art and Industry next year at Düsseldorf, already referred to, is making rapid progress. The applications for space from intending exhibitors have far exceeded the anticipations of the committee. It was originally calculated that a ground area of 25,000 square mètres would be ample for all purposes, but it has already been found necessary to enlarge the plan of the main building to such an extent that it alone will cover 32,000 square mètres, without reckoning the refreshment department, and other annexes. It may be mentioned that the Berlin Exhibition, which was such a great success during the past summer, only covered 18,000 square mètres in all; so that the Düsseldorf building, with the annexes, will be more than twice that size. Like the Berlin Exhibition Building, that at Düsseldorf is being built of wood, and of the quantity required for the purpose, some idea may be gathered from the fact that the value of the first 350 railway wagon-loads already delivered by the Rhenish Railway Company in the Exhibition grounds exceeds the sum of 10,000*l.* sterling. A number of the most important exhibitors have united together for the purpose of securing more space than can be allotted to them in the building, and they have resolved, as the best way to achieve their purpose, to erect several annexes of their own, which are to be carried out in a very tasteful style of architecture. It is calculated that the space covered by the annexes will be upwards of 10,000 square mètres. This is in addition to the area covered by the main building. In order to accommodate the expected rush of visitors, for whom the existing hotels would be insufficient, a committee is engaged in preparing a number of *hôtels garnis*, where strangers may find comfortable lodgings at a moderate rate. The main building is to be completed by the end of November, and with the help of 150 carpenters, who have been brought chiefly from the province of Hanover, it is expected that the contractors will be able without difficulty to observe this condition of the contract. The general committee of management have resolved, owing to the much larger proportions the enterprise has assumed than was at first contemplated, to extend the time for which the doors of the Exhibition are to be kept open. The opening ceremony will take place at the commencement of May instead of the 1st of June, and the Exhibition is to close at the end instead of the middle of September.

REMODELLING OF AN OLD CITY CHURCH.

The ancient church of St. Margaret Pattens, Rood-lane, Fenchurch-street, has just been reopened, after undergoing several internal alterations, which necessitated its being closed for a period of ten weeks. One of the principal alterations consists of the removal of the original pews, which is now being rapidly carried out at many of the old churches, both in the metropolis and in the provinces. An entire change has been effected in the body of the church. Open benches, of a modern design, have been substituted for the pews, the fine old oak forming the pews having been utilised for the purpose. The nave of the church, as re-arranged, consists of a passage, 10 ft. in width, covered with kamptulicon, the stone floor underneath having been restored. Clergy and choir-stalls in oak have also been introduced, occupying a considerable part of the enlarged chancel. The nave and aisle floors have likewise been raised several inches above the floor level of the nave and aisle passage, and relaid in pitch pine. An elaborate reredos has also been erected above the communion-table.

IMPROVEMENT OF SOUND.

We have all heard of the metal vases of the ancients placed with a view to increase the sound of the voice or of music, and of somewhat similar arrangements, though the statements are less precise, made in Mediæval buildings with the same end in view. Until we know how with certainty to build all apartments so that speakers and musicians will be everywhere heard in them, means to strengthen sounds and to overcome existing acoustic defects will be sought for.

The architect, with all his knowledge, works much in the dark, as he can never make sure of the excellence of his building in respect of sound when completed, and it is well known that frequently a place which is excellent for sound when quite full of people becomes indifferent in this respect when only partially filled, or *vice versâ*. The cause of this is that when the sound-wave strikes against a hard substance, it returns and combines with the original sound, and thus increases its volume if it come at the right time; but as the return of this sound-wave must depend on the shorter or longer distance it has to travel, it will be easily understood that the latter may destroy the clearness of the former, and in some instances make it unintelligible; and this defect is to be found, more or less, in all large buildings. Means may be produced to remedy this, but then the sound will appear to be dull, as the resonance is taken away, and a speaker or singer can then only be distinctly heard by those nearest to him. It is, therefore, of importance to increase the sound at its source, and to effect this, Mr. A. C. Engert, of the City-road, has invented an arrangement which promises to be of use at any rate in some situations. As we saw it, the materials employed consisted simply of thin steel or iron plates, varying from No. 20 to No. 30 gauges—those thinner than these becoming inefficient by reason of loss of musical power, and those thicker becoming useless by reason of their continuing to vibrate after the production of the notes, in the manner of bells. The plates are very slightly curved to direct the sound forward, and dampers are attached for the like purposes as dampers are employed to the wires of pianofortes. Four or five of these steel-plates constitute a series, all being parallel at one end, top or bottom, according to circumstances, but each overlapping the other at the other extremity about 6 in. The thinner plates are the best for intensifying the lower and bass notes; the thicker plates for the higher or shriller notes. These plates certainly seemed to have much of the effect desired, and may be easily attached to pianoforte or organ. How the plan may be arranged and succeed for other purposes we have yet to see. On this Saturday morning, the 15th, a concert is to be given at Steinway Hall, Lower Seymour-street, for the purpose of testing and displaying Mr. Engert's invention. We wait for the result with some interest.

SCHOOL BOARD FOR LONDON.

At the meeting of the Board, last week, the report of the Works Committee, which was adopted, included the following items:—

"The committee have invited tenders for the erection of a school to provide accommodation for 800 children on the site in Park-walk, King's-road (Chelsea), and recommend that so soon as the plans shall have been approved by the Department, the lowest tender, that of Mr. C. Wall, of Lot's-road, Chelsea, S.W., amounting to 6,460*l.*, be accepted, with the addition of 460*l.* for provisions. [Cost of site, so far as purchased (area, 32,900 square feet), 7,660*l.* 6*s.* Total cost per head, 8*l.* 13*s.*]

The school which is being erected in Starlane, Fulham (Chelsea), is now nearly completed. The Department, however, have sanctioned the provision of 400 additional places in this sub-division, with a view to the enlargement of the school, and the committee think it desirable, for the sake of economy, that this enlargement should be carried out at once while the builder is on the spot. They have accordingly obtained a tender from Mr. J. Thompson, the contractor for the school as originally planned, for carrying out the enlargement upon the contract schedule of prices, and they recommend that as soon as the plans shall have been approved by the Department, this tender, which amounts to 2,773*l.* 5*s.* 4*d.*, be accepted. [Cost per head of enlargement, 6*l.* 18*s.* 7*d.*]

On the 15th of January last the committee submitted the following report to the Board:—'The committee have to report that Mr. A. Young, the assistant surveyor, who has been in the service of the Board since the 7th of February, 1872, has received the offer, on very favourable terms, of a share in the practice of a surveyor, lately deceased, which, in justice to himself, he cannot refuse. A great number of negotiations are at present in the hands of Mr. Young, and a considerable number of sites have been advertised for the current year. Mr. Young proposes that he should continue to act for the Board in all these matters for a period of twelve months, and undertakes not to allow his private work to interfere with his official duties under the Board, the whole arrangement to be subject to revision at the end of that time. The Works Committee are of opinion that, in the interests of the Board, it would be most inadvisable that the connexion between the Board and Mr. Young should terminate suddenly. They have full confidence in the undertaking given by him, and they recommend that his proposal be accepted, and that his appointment under the altered circumstances be confirmed for a period of one year.' The Board then decided that the appointment of Mr. Young, as assistant surveyor, should be confirmed for a period of twelve months on the above conditions, but with the substitution of the words 'all matters' for 'all these matters.' The committee have now had the matter again under consideration, and they recommend that Mr. Young's appointment be confirmed for another period of twelve months, from the 15th of January, 1880, on the same conditions as were fixed by the Board last year."

Presentation.—A very interesting social gathering was held at the Mitre Hotel, Lambeth, on Saturday, November 8th, when a large number of the *employés* of Mr. George Jennings, sanitary engineer, Stangate, Lambeth, met for the purpose of presenting a handsome writing-desk to Mr. Watson, the cashier in the above firm (who is about to leave to accept a situation in the North), as a mark of the esteem in which he was held. The chairman, Mr. Jno. Gordon, in making the presentation, highly praised Mr. Watson for his conduct in cultivating good fellowship amongst such a large body of working-men, and for his assiduous attention to their interests as well as to those of his master. All present united in wishing him every success in his new post. The proceedings terminated with a vote of thanks to the honorary secretary, Mr. W. Halligan.

THE CORBEL TABLE AT ST. ALBAN'S.

SIR,—The clerk of works at St. Alban's is a trifle too fast in his laudable desire to defend what has been done in the work under his supervision. It is well that he should caution your readers to "believe nothing that they hear, and not one half of what they see," just before indulging in the grossly-misleading statements which he has thought fit to make. It might not seem worth while to reply to such an epistle, but the question is of too much interest and importance to let it pass without further notice; for I deny, not the plausibility, but the possibility of what he asserts as indisputable fact. I deny that the old corbel-table to which I referred (called by him "a cornice") "was built on a wall raised 5 ft. 6 in. in the thirteenth century," and I deny that it was in itself composed merely "of some pieces of Roman tile inserted for repairs, a course of common brick manufactured within the last fifty years, and the remainder of common roofing tiles and plastered."

He might have observed that I did suggest the possibility of its being of later construction, and at the time of the controversy I purposely raised this very question, hoping that something would be said about it. But I did not succeed in getting a "rise" out of him, or out of any of those who might be supposed to be informed on the subject.

By some of the best authorities, this corbel-table was supposed to have been constructed in the thirteenth century, when the stone string was introduced. It has remained till now for Mr. Chapple to let us know that it was built upon the top of a raised wall of thirteenth-century date, and then to give force and reality to his statements by a very detailed description of what has no existence in fact. There was, I maintain, no room for the existence of such a raised wall beneath this corbel-table, seeing that there was a space of only 3 ft. 10 in. from the top of the arch of the Norman window to the bottom of the corbel-table. The tiles of which the corbel-table was constructed were in thickness just about half-way between his 2½ in. and the thickness of the common roofing-tile of which he says it was composed. He may be quite at liberty to express his own opinion, or to set forth that of others as to the exact date of the corbel-table itself; but to support that opinion with detailed description of what really did not exist, cannot add much weight to what he says.

I am, however, indebted to him for suggesting a phrase which aptly expresses what I, in common with many others, complain of,—that "Bill Stumps his mark" should be so ruthlessly and indelibly written upon every fraction of St. Alban's Abbey, and that the only evidence which might seem to serve as a subterfuge for this alteration should be destroyed. To quote from a letter which I received a short time since,—"I have been so disgusted with the alterations that I have endeavoured to forget St. Alban's."

I am aware that it must be a sore subject to those concerned in the work which has been carried on; and had the corbel-table been left it would have been a standing memorial against the lines of the new roof. But it is a subject still more sore to those the study of whose life it has been to see in such remains the architectural evidences which have been here so recklessly destroyed.

I cannot leave the matter here. The importance of this corbel-table is not at all confined to that of its construction, or of its interesting character. It is intimately connected with the pitch of the original roof, and other parts of the history of the abbey. Having reconsidered it in all its bearings, I am now more than ever convinced of its having been of Late Norman date. There are but three periods to which it could be assigned—(1st.) That of the actual date of the thirteenth-century string-course above it; a small portion of which has been rebuilt into the new work. (2nd.) That of the date subsequent to this. (3rd.) That of the date prior to it. It cannot well have been of the first period named. We cannot suppose, and I have met with no precedent here or elsewhere to show, that the architects of the thirteenth century ever constructed a cornice of that character. Finding it there they might crown it with a string-course of their own devising, ready to receive the parapet to be raised above it. There are many instances in the Middle Ages of earlier work being thus incorporated into the new. But, even supposing the construction of this cornice to be consonant with the period, it is impossible to suppose it would have been erected by the same men who put up the other thirteenth-century corbel-table and parapet. It cannot well have been of the second period named; for there is no time since the Middle Ages at which such a cornice would have been constructed with the old Roman tiles finely cut in the upper part, and with the old stone corbels and Mediæval string-course. If constructed subsequently to the making of some of the bricks fifty years ago, as intimated by the clerk of the works, it would be interesting to be informed whence the old stone corbels were obtained; and also to know at what period the lead flashing was put over to protect portions of the string-course, which lead flashing must have been very many years in its old position. If, again, it was constructed previously to the thirteenth century, there is no time to which it can be assigned but the late Norman, which is the date of a large portion of the interior stone-work. Until these times no "clunch" stone had been introduced into the building. These old corbels were of clunch. They were either very rudely cut or, what is more probable, much decayed; and they had all the character about them of corbels which I have seen of undoubted Norman period.

The Mediæval builders never exactly copied or reproduced earlier work. They very often "followed" ideas taken from earlier construction, imparting to their work a character of its own; and it certainly looks very much as though the Early English architect had this corbel-table in his eye when he designed his.

And once more, the lines of the old Norman roof (as arrived at by Mr. Neale, Mr. Street, myself, and others, quite independently of each other) accurately coincide with the top of this corbel table, which, as I maintain, formed the eaves-course of the original roof. It could not have been specially constructed for any other of the subsequent roof-lines visible; but, being there, it might well have been suffered to remain through the successive changes. It is remarkable, too, also, that this corbel-table was exactly co-extensive with the Norman work below, not only on the south side, but, if I mistake not, with the more extended Norman work on the north also. Unless the corbel-table were coeval with the Norman work, it would be an extraordinary thing that such pains should have been taken at any period of architecture to assimilate it thereto, or to make it coincident with it.

I hope Mr. Chapple will now be able to see that in his attempted sarcasm upon my having "made the discovery that a Norman cornice has been destroyed," he has only succeeded in giving expression to an almost indisputable, though, perhaps, unpalatable, truth.

WILLIAM WHITE, F.S.A.

NEW BUILDING AND LAND COMPANIES.

AMONGST the several new joint-stock companies which were registered last week there were no fewer than four connected with building operations and land projects. One of these is designated the Estates and Buildings Improvement Association, with a proposed capital of 500,000*l.* in 50,000 shares of 10*l.* each. The objects of the association are stated to be two-fold. One class of business proposed is the purchase, improvement, and sale of houses, and the other the purchase, development, and sale of land. One portion of the business proposed to be carried on by the association is to lay out the several estates which may be purchased, and to cover them with houses. The prospectus states that this branch of the business would, in the hands of skilful and experienced architects and builders, be a source of great revenue, and that in other respects it is believed that the undertaking will prove to be a very profitable business. The architect of the association is Mr. J. L. Holmes, of Leadenhall-street, and the surveyors are Messrs. Wilson, Son, & Aldwinckle, of East India Avenue.

The Kempton Estate Company is another of the new companies registered. Its capital is 85,000*l.* in 8,500 shares of 10*l.* each. The object of the company is to acquire the Kempton Park Estate, in the parish of Sunbury, Hampton, and Hanworth, and to build upon and develope the estate.

The Liberal Land Company, with a capital of 100,000*l.*, in 20,000 shares of 5*l.* each, propose to acquire by purchase, exchange, lease, or otherwise, freehold, copyhold, and leasehold properties, and to improve the property when so acquired, or to lay it out and re-sell it for building purposes.

THE PRINT ROOM: BRITISH MUSEUM.

SIR,—Every English art-student will endorse the honourable testimony you have borne to the desire of the British Museum authorities, Mr. Bond and Mr. Reid, to make available and to preserve the treasures of the Print Room in Great Russell-street.

Every one regrets that the precious drawings and engravings in the "old print room in the Rue de Richelieu" are not better protected against friction. You commend to the English authorities the new French act of "opening a photographic workshop" in connexion with the Cabinet d'Estampes, but your readers may not be aware that such an addition was many years ago made to the English Print Room, and is in frequent, if not constant use for the benefit of publishers and all who care for it.

Innumerable choice examples in the English Print Room have been already placed within "sunk mounts," and thus made safe from friction. The number of these protected examples is daily enlarged. F. G. S.

THE OWNERSHIP OF ARCHITECTS' DRAWINGS.

SIR,—Some little time ago the ownership of an architect's drawings was a burning question. May not some little light be reflected on the subject by the correspondence now proceeding in the *Times* as to "Copyright in Photographs"?

So far as copyright is concerned, the whole question seems to hinge upon whether a photographic negative made in the present usual course of business can in itself, and distinct from the photograph, be considered as executed for a good consideration or not? If not, as is affirmed by eminent legal authorities, how then can an architect's drawing made for the production of a building be said to be so?

"A Barrister," in a letter to the *Times* of the 30th of October, states that:—

"The Copyright Act, in a transaction where there is no special mention of the fact, does not touch the question of the right of property in the negative itself, as distinguished from the copyright of a photograph executed on order for a good or valuable consideration.

Without making the negative, the photographer cannot furnish the prints, which are all that are, in fact, supplied or expected. But the photographer only takes the negative for the purpose of executing the order for the prints, and a person ordering and paying for his portrait to be taken by a photographer may fairly be described as 'the person for or on whose behalf the negative is to be executed.'"

The parallel case as to an architect's drawings is obvious.

Mr. Watkin Williams, moreover, says in a letter published in the *Times* of the 3rd of November:—

"When a person orders his photograph in the ordinary way, surely the preparation of the negative is too remote for it to be properly said to have been made for the orderer of the photograph. It is made by the artist for the purpose of producing what has been ordered. Many artificers of whom articles are ordered prepare moulds, dies, models, types, sketches, paints, and other things in order to execute the commission intrusted to them. Now, I ask, could it be said with any accuracy that, in the absence of special circumstances, such preparatory apparatus was executed by the artist for another person for valuable consideration? The question is undoubtedly one of fact and not of law. But I venture to repeat that, in the ordinary case, all such preliminaries are made by the artist for himself for the purpose of enabling him to execute his customer's order."

R. E. P.

SAFE WINDOW-CLEANING.

IN connexion with our recent note as to inquiries for a window that can be cleaned without endangering life, we are reminded of what is known as Baker's Patent Ventilating Window, advertised some time ago in our columns. By a novel arrangement of the beads, these sashes, hung with special hinges, may be turned completely over for cleaning; when opened for ventilation they afford shelter from rain, and when closed they are air and water tight. This window acts at the same time as an inlet and outlet ventilator. The draught is directed upwards towards the ceiling, and may be regulated.

A model of the window may be seen at the Parkes Museum of Hygiene in University College, Gower-street, where many of our readers would find useful hints.

AWARDS, CROYDON SANITARY EXHIBITION.

The judges (Professor Corfield, Mr. Rogers Field, C.E., Mr. W. Eassie, C.E., and Dr. H. C. Bartlett), have recommended to the Council of the Sanitary Institute,—

That Medals be awarded to the following exhibitors, viz.:—W. H. Lascelles, Bunhill-row, for concrete bath, in one piece; Wilcock & Co., Burmantofts, Leeds, for silica glazed and enamelled fire-clay bricks and faience; Hamilton & Co., Kingsland-road, for patent prismoidal pavement and floor-lights; and H. Doulton & Co., Lambeth, for patent anti-percussion high-pressure valves.

The judges further recommend,—

That Certificates of Merit be awarded to the under-mentioned, among other exhibitors, viz.:—P. Hinckes Bird, F.R.C.S., for his method of costless ventilation; U. Knell, for his "Imperial" ventilating window; Benjamin Finch & Co., High Holborn, for large-way waste plug, with protective cover; Wilcock & Co., Leeds, for fireclay sanitary sinks and water-troughs; *Le Grand & Sutcliff, Bunhill-row, for improvements in driving tube-wells; J. C. Edwards, Trefynant, for Dean's patent external drain traps; Beard, Dent, & Hellyer, Strand, for patent ventilating drain syphon; Hygienic Stove and Grate Company, Birmingham, for "Eagle" sanitary trap; H. Doulton & Co., for decorative tiles for covering walls and floors, and for disconnecting gully; George Jennings, Stangate, for "Artisans' Dwellings" sink, and for universal shampooing apparatus; *Sanitary Appliance Company, Salford, for Morrell's patent cinder-sifting ash closet; *J. E. Ellison, Leeds, for conical ventilators; J. G. Stidder & Co., Southwark, for swivel lock plug and overflow for sinks; R. Adams, London, for patent adjustable shoe, and regulating spring hinge for swinging doors, and for fanlight openers and casement fasteners; Patent Victoria Stone Company, for artificial stone tubes; Henry Sharp, Jones, & Co., Poole, for rock concrete tubes; and *G. E. Pritchett, F.S.A., for Improvements in Hollow Tile Flooring.

Deferred for Practical Trial.—Many of the articles the judges are unable to express an opinion upon without testing; and they recommend that they should be tested at the expense of the exhibitors, if they are willing to incur the same. Among them are the following, viz.:—Sanitas Company, disinfecting fluid; hopper closets, exhibited by Doulton & Co.; Beard & Dent, "Artisan" closet; Messrs. Warner, Sharpe's hopper closet; and W. Ramsey (Limited), Dodd's ventilating hopper closet; J. G. Stidder & Co., infirmary closet; W. & S. Carsley, Jewell's hopper closet basin; W. H. Lascelles, concrete floor construction; B. Finch & Co., 4-inch ball-valve for large cisterns, with balanced valves; W. Woollams & Co., paper hangings free from arsenic; W. & S. Carsley, urinals, iron traps, and sink, coated by Professor Barff's process.

Until the deferred trials have been carried out, the judges are unable to award the Gold Medal of the Institute. They state that they have found that alterations have been made in certain exhibits to which medals and certificates were previously given, by which alterations some of the essential merits for which medals or certificates were awarded have been destroyed. They therefore recommend that in future each person receiving medals or certificates should be warned against using the name of the Institute in connexion with any article which has been altered since the award was made.

FLATS.

Sir,—That there is a considerable demand for flats nowadays is indisputable, and if builders do not erect any, it is because they know that certain sorts of stereotyped houses will let and sell, but they feel doubts as to the success of anything new or different to the routine. Hence they go on multiplying the same common-place dwellings that their fathers did before them, and that they have themselves erected all their lives.

But if confined to a small scale, the experiment is easily tried, and can be put in a form readily understood by all. Thus, the ordinary suburban house of eight rooms, in terraces, generally has some 17 ft. of frontage, and four floors, with two rooms on each. It lets at from 35*l.* to 45*l.* a year, according to locality, style of build, of finish, &c. Now, if we take two of these houses together, we get a building with four rooms on a floor, which we may arrange as sitting-room, two bed-rooms, and kitchen. If we take out one of the two staircases, we gain space for a scullery or a bath-room. The rent of the two houses in usual form being, say 80*l.*, and rates and taxes 20*l.*, we should require a total rent of 100*l.* a year from the four flats, or say a little more. Now, does any one conversant with the subject doubt for a moment that the flats would produce that amount? Our own opinion is that by raising the basement floor a little more out of the ground than usual with kitchens, a total rent of 110*l.* could be got. That is, 25*l.* a year each for basement and top floors (or 10*s.* a week); and 30*l.* a year each for ground-floor and first-floor. So that it would be more profitable to build two houses together or in flats than separately.

A builder who might naturally hesitate long before he built a huge pile of Peabody dwellings, might thus with good courage commence building one double house for flats. All this contemplates a comparatively poor suburban neighbourhood; in central parts, of course, the returns would be much greater.

H. & R. P.

* There are two classes of exhibits which the judges recommend should be excluded from awards of medals,—namely, those which were exhibited at Leamington or Stafford, and to which a medal was then awarded; some of which they recommended should receive certificates, and these they have distinguished by asterisks; and secondly, objects exhibited or invented by any of the judges themselves, such as Mr. Eassie's exhibit of specimens of bad plumbing, and Mr. Rogers Field's self-acting flush tank, exhibited by Messrs. H. Doulton & Co.

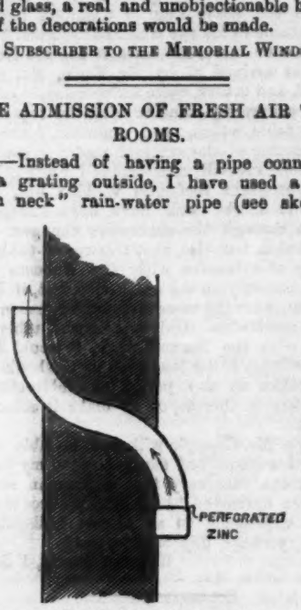
STAINED GLASS IN ST. PAUL'S CATHEDRAL.

Sir,—Your recommendation that St. Paul's should first be filled with the best stained-glass (p. 1229) seems to me most appropriate, and suggests to me to ask, why the window, to commemorate the recovery of the Prince of Wales and the state visit to the cathedral, has not been executed? Years ago the funds were subscribed by members of the Society of Arts, a design was made, and approved by the present dean, but nothing further has been done. The proceeding with this window was stopped by Mr. Burgess when in charge of the decorations, because he wished to have a different subject in the space appointed, and since then nothing has been done. If the present committee, consisting of Mr. Fergusson, Mr. Gambier Parry, Mr. Oldham, &c., would resolve to follow your advice, and fill all the windows with richly-stained glass, a real and unobjectionable beginning of the decorations would be made.

A Subscriber to the Memorial Window.

THE ADMISSION OF FRESH AIR TO ROOMS.

Sir,—Instead of having a pipe connected with a grating outside, I have used a 4 in. "swan neck" rain-water pipe (see sketch).



Section of Pipe for the admission of Fresh Air.

By this means the advantage of an upward current of air is obtained, and the pipe is hardly noticeable in the room. Moreover, I find that blacks are not so easily admitted as when a grating is used. A piece of perforated zinc can be fitted into the socket end of the pipe. This is the end which should be on the outside of the wall. The other end of the pipe, in the room, should be about 4 ft. from the floor.

C. F. M.

THE ANNOYANCES OF GAS.

If your correspondent "Y." (who by no means exaggerates the annoyance of grime and filth on low ceilings arising from gas, and forgets the still greater injury to health from the sulphurous and carbonic oxide and carbonic acid fumes) will take the trouble to go to the Library at South Kensington, he will see at what a ludicrously small cost it may be all avoided. The chimneys from the argand burners there slide up into a tin pipe, and all the products of combustion are carried off into the open air without mixing with the atmosphere in the rooms at all. This plan would never have been thought of to remedy the injury to the lungs of human beings, but the binding of the books must not suffer from the destructive gases, and hence this remedy.

The cost would be repaid by the cost of one year's whitewashing the less, and the ugliness would soon be cheerfully borne when the inhabitants of these now stuffy rooms felt the comfort of the pure atmosphere and complete ventilation this plan gives.

The time is close at hand when it will be considered an unbearable nuisance to burn gas in any room without a chimney to carry away the products of combustion.

Z.

SANITARY APPLIANCES.

Sir,—In your issue of November 1st you were good enough to notice our stand at the Exhibition of Sanitary Appliances, Croydon. We beg to call your attention to the fact that you have not described the patent pipes we exhibit as we describe them. They bear the name of the patentee, Herbert J. Jones, and are known in the trade as "Herbert J. Jones's patent drain-pipes."

Thos. Smith & Co.

ROARING WATER-PIPES.

Sir,—With reference to my remedy for the above, I wish to correct an error. Instead of *soldering* the piece of pipe to the outlet of the ball-valve it should be fixed on *loose*: it will not then act as a syphon. I know from experience that it is a certain remedy.

W. Dunkin, Plumber.

ILLICIT COMMISSION.

ANDREWS *v.* FENN.

This case (heard in the Lambeth County-court before Mr. Pitt-Taylor) was brought for the recovery of a balance of commission, and is reported in the *South London Press*. Plaintiff is described as a draughtsman carrying on business at Norfolk-street, Strand; defendant is a builder carrying on business in Beresford-street, Walworth.

The claim was for 4*l.* 15*s.* balance of an account for commission. Plaintiff, it appeared, had had placed under his control five dilapidated houses situate in Broad-street, Lambeth. Plaintiff had also the option of employing any builder he saw fit to carry out the necessary repairs. Plaintiff and defendant had some conversation on the subject, and plaintiff asked defendant what percentage he would allow him in the event of his obtaining defendant the job. Defendant said he would allow him five per cent. Plaintiff complained that that was a small percentage on a 200*l.* job, but agreed to obtain it for him on those terms. The contract was obtained by the plaintiff for defendant, and amounted with extras to 215*l.* Plaintiff then claimed his commission,—10*l.* 15*s.*,—but defendant refused to pay more than 6*l.* of that amount. This sum had been paid to the plaintiff, and he now sought to recover the balance of 4*l.* 15*s.*

The Judge (to plaintiff).—It is my duty to tell you that you have committed a gross fraud, and you may consider yourself fortunate you have not had to appear before a magistrate. A gentleman engages you for the purpose of obtaining a builder at the cheapest rate, but instead of doing so, you make the best bargain you can for yourself It is a gross fraud, and you ought to be ashamed of yourself; so get out of the court as soon as you can.

Judgment for the defendant, with costs of solicitor.

OBITUARY.

Mr. William Farmer.—We regret to announce the death of this gentleman, the senior partner in the well-known firm of Farmer & Brindley, architectural sculptors, which took place on the 6th inst., after a few days' illness, at his residence, 67, Westminster Bridge-road.

M. Poelaert.—The death is announced of M. Joseph Poelaert, a Belgian architect.

VARIORUM.

"A Treatise on Metalliferous Minerals and Mining," by D. C. Davies, F.G.S. (Crosby Lockwood & Co., 1880), describes in a concise manner the conditions under which metals and metallic ores are found in the different countries of the world. It includes knowledge which ought to be more generally possessed than it is, and has many illustrations.——"Electro-Plating, a Practical Handbook, including the Practice of Electrotyping," by J. W. Urquhart, C.E. (Crosby Lockwood & Co., 1880), is addressed rather to amateurs and the outside public than to professional practisers of the business. Any ordinarily intelligent person may become an adept in electro-deposition with a very little science indeed, and this is the book to show him or her the way.——The *Magazine of Art*, bound as a volume, makes a handsome, agreeable, and instructive drawing-room book. Oddly enough, it has exactly as many illustrations as pages, 288, though many of the pages are without illustrations, and others show three or four.——"The Carlyle Birthday Book" (Chapman & Hall) gives, as may be supposed, quotations from the works of our distinguished countryman, opposite a space for each day of the year, wherein friends are hereafter to enter their names to note which date has the honour of belonging to them. It makes a nice little book, and

cannot be dipped into without advantage. A second quotation in some instances, however, strikes us as questionable. Why should a man find himself ticketed "A sad dog," *Essay on Mirabeau*, because he was born on February 2, or "A dreadfully dull individual," *Oliver Cromwell*, because his birthday is the 5th of that same month?

Miscellanea.

Yorkshire Fine Art and Industrial Exhibition.—This exhibition was closed on the 8th inst. It sprang out of a similar exhibition which was held in York in 1866, and which, after the payment of all expenses, left a surplus of 1,866*l*. The consideration as to the disposal of this surplus led to the suggestion that it would be best employed in providing some permanent building devoted to the encouragement of art and industry. It was thought that the possession of a building of that description, and a frequently-recurring exhibition of works of art and industry, would be a great boon, and tend to give permanence to the impulse which that exhibition had given to the trade and prospects of the city. It was in 1874 that the executive met again for the purpose of further maturing this suggestion, when a sub-committee was appointed to report generally upon the subject. After they had done so, the site of the proposed exhibition was obtained, at a cost of 4,000*l*. from the Commissioners of her Majesty's Woods and Forests, and a loan fund of between 12,000*l*. and 13,000*l*. having been subscribed, the foundation-stone of the building, which it was estimated would cost about 24,000*l*., was laid on the 22nd of April, 1878. The building (of which we gave a view in the *Builder* at the time, p. 514, *ante*.) was opened on the 7th of May, 1879, the formal ceremony being performed by the Archbishop of York. The actual number of admissions up to the night before the closing ceremony was 531,294, and the total amount received for admissions was 14,170*l*. 4*s*. 5*d*. It is expected, after the payment of all claims, there will remain in the hands of the trustees permanent property to the amount of 26,353*l*., and a cash surplus about equal to that of the last exhibition, with responsibilities (the loan fund) to the amount of 12,718*l*.

St. Paul's Ecclesiological Society.—A *conversazione* of the members and friends of this society was held on Wednesday evening at the Chapter-house, St. Paul's-churchyard. There was a display of ecclesiastical art objects, among them several rubbings of brasses, both foreign and English. It is stated that the society, which has been established scarcely nine months, now numbers nearly 250 members. The following, among other papers, have been promised for the ensuing session:—"Old St. Paul's," by Mr. Edmund B. Ferrey, F.R.I.B.A.; "The Christian Altar Architecturally Considered," by Major Alfred Heales, F.S.A.; and "Christian Iconography," by Mr. George H. Birch, honorary secretary of the London and Middlesex Archæological Society.

A Nuisance in Chelsea.—We (*Medical Press*) have received a complaint from a resident in Chelsea of a very serious nuisance existing on a property owned by the Chelsea Vestry. It is situated in the Lot's-road, and known as Lot's-road Wharf, where a refuse heap of an extremely offensive nature is lodged. The foul smells constantly emanating from the pile are of the most disagreeable kind, and cannot fail to exert an injurious influence on the surrounding atmosphere. The passengers from the Embankment along the road rightly regard the continuance of the evil as a grave source of danger, even to themselves, and for those who are constantly subject to it the consequences must be still more injurious.

Newcastle-on-Tyne.—The Newcastle Town Council has adopted the report of the Joint Committee on the Borough Engineer and Town Surveyor's Department, which recommended the division of the duties of the department between Mr. Fowler and Mr. Fulton, the latter to be town surveyor, and to be responsible to, and act under the direction of, the town improvement committee; and also that the charge of the cleansing of the ashpits and streets and macadamised roads be entrusted to Mr. Curry, who also is to be responsible to the town improvement committee.

A Much-needed Improvement Postponed.—At the meeting of the Metropolitan Board of Works on the 7th inst., the Works and General Purposes Committee presented a report on the resolution of the Board of the 4th October, 1878, referring it to the committee to consider and report as to the desirability of making an application to Parliament for the construction of a spur-street from the junction of Theobald's-road and Gray's-inn-road towards the "Angel," at Islington, and upon the memorials of the Holborn District Board and the vestries of Clerkenwell and Islington on the subject; stating that, in the opinion of the committee, it is not desirable to make such application for the construction of a spur street in the next session of Parliament, and recommending that the several memorialists be so informed. The report of the committee was adopted. This decision is to be regretted, for improved direct communication between Holborn and Islington is much needed. We have frequently referred to the perils of the present tortuous and precipitous route *vid* Elm-street, "Mount Pleasant," and Coldbath Fields.

The Ruskin Society, Manchester. — At a meeting of the society, held on the 5th inst., the hon. secretary (Mr. F. W. Pullen) said the progress that the society was making was owing more to the help they were receiving from other quarters than from their own members. The members in Manchester were very lukewarm, and if it depended upon them the progress of the society would be very slow indeed. The first donation to the society, other than the subscriptions of members and associates, came from the Hon. Mrs. Cowper Temple, who sent a 5*l*. note, and said she looked to the society helping the St. George's Guild more than anything she knew. A paper was then read by Mr. Edmund J. Bailie, of Chester, on "Natural Adornment."

Liverpool Architectural Society.—At the meeting of the Liverpool Architectural Society, on Wednesday evening, the best of the drawings executed by the students, during the recess, of St. Chad's Church, Kirkby, for the prize offered at the close of last session, were exhibited and criticised by Mr. Hay, who announced that the first prize would be awarded to Mr. George Hornblower, and the second to Mr. J. R. Chidson.

Papers for the Institution of Civil Engineers. — A list of subjects is published upon which, among others, the Council of the Institution invite original communications, either for reading and discussion at the weekly meetings, or for printing in the "Minutes of Proceedings" without being publicly read and discussed. The list is preceded by a recital of the ample funds at the disposal of the council for awarding premiums and prizes to the authors of approved communications.

The Late Mr. P. F. Poole, R.A.—The will, dated February 7, 1877, of Mr. Paul Falconer Poole, R.A., late of Uplands, Greenhill, Hampstead, who died on September 22 last, was proved on the 23rd ult. by John Mogford and Francis Henry Huntington, the executors, the personal estate being sworn under 16,000*l*. The testator leaves to the trustees of the National Gallery any of his pictures that they may select and think worthy of being exhibited in that collection and will undertake to exhibit permanently.

The Brownhills Local Board have instructed their surveyor, Mr. Siddalls, to prepare plans for new public buildings, &c., proposed to be erected on an acre of land near the railway station; the accommodation to be provided consisting of offices for surveyor, inspector of nuisances, collector and clerk, board-room and ante-rooms, residence for the surveyor, stabling, &c. The Board are also about to memorialise the Quarter Sessions to hold a Petty Sessional Court at Brownhills, in which case they intend building an assembly-room, which can be used for the magistrates' meetings, &c.

Value of Land on the Embankment.—An offer has been made to the Corporation by a well-known public body, desiring to acquire a plot of land, on the portion belonging to the City, at the liberal rate of 1,265*l*. per annum ground-rent for 75 ft. frontage, by a depth of 130 ft., or to buy the freehold at twenty-five years' purchase, which would yield a total sum of 31,625*l*. Should the remaining land on hand be disposed of at this rate, a considerable profit would accrue to the Corporation on their investment.—*City Press.*

The Ulverston Revolving Shutters.—The Southport Reform Club, recently opened by Sir W. V. Harcourt, M.P., and lately referred to in our pages, is fitted up with Messrs. Salmon, Barnes, & Co.'s patent revolving shutters, worked by patent balance-weight motion. A full-size model of these shutters, which are obtaining considerable approval, will be found in the Maddox-street Museum of Building Appliances. It appears to work easily and well. The chemical, physical, and large theatres of the University College, Nottingham, have been fitted up by this firm with darkening blinds, which effectually exclude the light. Each series can be raised and lowered in the space of half a minute by one man. A new edition of Messrs Salmon & Co.'s Catalogue of Revolving Shutters &c., is published, and will give all the information that may be desired.

The Cathedral Commission.—The Archbishop of Canterbury and other members of the Cathedral Commission have forwarded to the Deans and Chapters of England and Wales a circular, with a view to elicit information on the following among other important points,—"14. The number and condition of the buildings belonging to the Chapter in the vicinity of the cathedral, whether residentiary houses or other buildings, and the sources from which they are kept in order, with the sums expended annually thereon."

Scagliola.—At the Criterion Annexe in Piccadilly, now nearly completed under the direction of Mr. Thos. Verity, architect, Messrs. Bellman & Ivey have executed some fine scagliola marble in the shape of columns and pilasters. In the Great Hall, four fluted columns and fourteen pilasters to match old work; and in the *buffet*, six columns in red Devonshire, which are fixed round iron cones without showing joint.

Accident. — On the 5th inst., a painter named William Lomax, was working on a scaffold at the new covered market at Todmorden, his employer, Mr. Sidney Smith, and another man being also at work on the same scaffold, when a "spar" broke, precipitating Lomax and the other man to the ground. Mr. Smith fortunately had hold of a girder, and was thereby able to save himself from falling. Lomax fell on his head, and died ten minutes after the accident; the other man escaped with but slight injuries.

City of London College, Leadenhall-street.—We are asked to state that the ceremony of distributing the prizes to the successful students, which was fixed for Thursday, the 13th instant, has, at the request of their Royal Highnesses the Duke and Duchess of Connaught, been postponed until Thursday, the 20th inst., at seven o'clock p.m.

Craven, Dunnill, & Co.'s Tiles.—Medal has been awarded to Messrs. Craven, Dunnill, & Co., Jackfield Encaustic Tile Works, Ironbridge, Shropshire, for their design of the pavement of the entrance-hall of the Exhibition, and in testimony to the admirable manner in which it has borne the traffic of more than half a million of visitors.

Stockton Surveyorship.—Mr. S. E. Thorrold, of North Ormesby, Middlesbrough, has been appointed surveyor to the South Stockton Local Board of Health, *vice* Mr. Francis Drake, C.E., resigned. There were upwards of eighty applicants for the appointment. The salary, which was originally 200*l*. per annum, has been reduced to 160*l*.

The Vyrnwy Water Scheme, Liverpool.—The Corporation of Liverpool, having polled the ratepayers on the question of the adoption of this scheme, have obtained a majority of 2,660 votes in favour of it, the votes recorded for the scheme numbering 21,974, against 19,314 votes in opposition.

Piercy Blue Brick Works.—The highest award, a medal, has been given to Mr. Joseph Hamblet at the Yorkshire Fine Art and Industrial Exhibition, "for the excellence of his manufacture." Five "highest awards" have been received by him since 1874.

Royal Scottish Academy.—On Wednesday, at the annual meeting of the Royal Scottish Academy, held in Edinburgh, Sir Daniel Macnee, president, in the chair, Messrs. Robert Anderson, J. Z. Wingate, and J. C. Noble were elected associates in room of Mr. Gavin, Mr. Cassie, and Mr. Docherty.

New Government Offices.—The officers of Inland Revenue have for some years been agitating for an improvement in their offices, and especially in those outports where there are large distilleries and maltings. The offices as now provided are generally only small rooms badly lighted and ventilated, in which the officials have to remain a number of hours daily to transact most intricate business in the shape of calculations, as well as to accommodate merchants and their representatives. It is known that the present offices cannot in any way compare for space with the more modern Custom-houses and Post-offices, and the Treasury has promised to introduce a scheme for better provision being made.

TENDERS

For the erection of a villa residence, Walthamstow. Mr. Robert Blackmore, architect:—

Webb	£749 0 0
Brooks	699 0 0
Philips	549 0 0
G. Webb & Co.	533 0 0
Winter	520 0 0

For building the Railway Tavern, Mare-street, Hackney, for Mr. B. Hyams. Mr. S. Brown, architect:—

Huff	£7,763 0 0
Tibbett & Adams	7,680 0 0
Royle	7,558 0 0
Brooks	7,535 0 0
Outhwaite & Son	6,997 0 0
Wood	6,963 0 0
Gould & Brand	6,896 0 0
G. Crabb	6,806 0 0
Colls & Son	6,723 0 0
Crisp & Tomlin	6,685 0 0
Battley	6,675 0 0
Shurmur (accepted)	6,597 0 0
Linzell, jun.	6,469 0 0
Castle	6,435 0 0
Jones & Co.	6,385 0 0
Palmer	6,300 0 0
W. Crabb	6,300 0 0
Jackson & Todd	6,150 0 0
Prout	5,875 0 0
Stevenson	5,831 0 0
High	5,800 0 0
Gill	5,297 9 0
Gasfittings.	
Steadman	£430 0 0
Vaughan & Brown	425 0 0
Winne (accepted)	405 10 0
Pewterer's Work.	
Grimes	£316 10 0
Edwards	295 10 0
Pringle	281 10 0
Rogers	268 0 0
Paddon (accepted)	248 19 9

For new warehouses, Turnmill-street, for Messrs. Grant & Co. Quantities by Messrs. Batterbury & Huxley:—

Kiddle & Sons	£5,747 0 0
Ashby Bros.	5,612 0 0
J. & J. Greenwood	5,592 0 0
Williams & Son	5,582 0 0
Mann	5,474 0 0
Downs	5,448 0 0

For villa residence at Mitcham, Surrey, for Mr. J. Woodward. Mr. E. Chart, architect:—

Keal (accepted)	£800 0 0

For rebuilding the "Buffalo," Appold-street, Finsbury, for Mr. C. Mees. Mr. Edward Brown, architect:—

Browne & Robinson	£2,040 0 0
Griffiths	1,950 0 0
Salt	1,885 0 0
Hayworth	1,795 0 0
Christopher	1,754 0 0
Marr	1,612 0 0
Outhwaite (accepted)	1,610 0 0

For three houses, Denning-road, Hampstead, for Mr. A. Field. Mr. J. T. Newman, architect. Quantities supplied by Messrs. Curtis & Sons:—

Hoskings	£3,376 0 0
Sheffield & Prebble	2,927 0 0
North Bros.	2,858 0 0
Hearle & Son	2,843 0 0
Snow (accepted)	2,457 0 0

For detached villa residence, for Mr. J. H. Marshall, in Buckingham-road, Woodford.

Good Bros. (accepted)	£800 0 0

For erection of flour-mill, Stoke, Guildford, for the executors of Mr. J. Burges. Mr. H. Moon, architect:—

Moon	£3,902 0 0
Mitchell, Bros.	3,850 0 0
Pink	3,767 0 0
Coles & Sons	2,744 0 0
Putney & Sons	2,711 0 0
Martin, Wells, & Co.	2,700 0 0
Goddard & Sons	2,689 0 0
Beale	2,618 0 0
Nye & Co.	2,495 0 0

For building villa residence at Ventnor, for Mr. David Mitchell. Mr. F. Newman, architect:—

Meader	£3,930 0 0
Barton	2,700 0 0
Newnham	2,570 0 0
W. Jolliffe	2,550 0 0
Sibley	2,310 0 0
Walder, Silsbury, & Kingswell	2,227 5 0
Ingram & Sons (accepted)	2,196 0 0

For buildings at Apley House, Ryde, for the Council of the Isle of Wight Proprietary College. Contract No. 1, new School-rooms, &c. Mr. F. Newman, architect:—

C. Jolliffe	£1,135 0 0
Meader	1,150 0 0
Newman	1,097 0 0
Sibley	1,043 0 0
H. T. & H. Jenkins	1,031 0 0
Barton (accepted)	948 0 0

For tower clock, Kingston Town-hall. Mr. John L. Robinson, architect:—

	No. 1.	No. 2.	No. 3.
Dent & Co.	£250	£158	£320
Booth & Son	211	121	282
Thwaites & Reed	213	136	277
Chancellor & Son*	189	115	218
Bailey & Co.	177	100	283
Dobbyn & Son	177	100	234
Frengley Bros.†	148	95	206

* Accepted. † Too late.

TO CORRESPONDENTS.

G. L. (we are unable to comply. Such a course would be full of inconveniences).—J. W. J. (notice should be given to the District Surveyor).—J. T.—T. P.—C. P.—J. H.—T. R. K.—W. W.—G. B. B.—J. P.—S. & Son.—W. S.—O. N. H.—M. & L.—F. G. S.—E. G. B.—W. B.—J. H.—B.—G. P. B.—G. S.—J. B.—C. F. M.—R. B.—C. W. A.—R. L. C.—M. P.—F. N.—J. S. T.—M. S. (not yet).—E. A. B. (next week).—W. P. (next week).—A Plasterer (next week).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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Addressed to No. 46, Catherine-street, W.C.

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The Publisher cannot be responsible for TESTIMONIALS left at the Office in reply to Advertisements, and strongly recommends that COPIES ONLY should be sent.

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RANDELL, SAUNDERS, & CO. (Limited), Quarrymen and Stone Merchants.
List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [Advt.]

Bath Freestone in Blocks of all sizes, warranted sound, and delivered at any Port or Railway Station.—YOCKNEY & COMPANY, Sole Owners of the CORSHAM DOWN QUARRY, Corsham, Wilts, to whom all letters should be addressed. [Advt.]

Doulting Freestone and Ham Hill Stone of best quality. Prices, delivered at any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster, Somerset. Agent: E. Crickmay, 4, Agar-street, London, W.C.—[Advt.]

Box Ground and Summer Dried CORSHAM DOWN STONE,
For Winter use.
PICTOR & SONS,
Bath Stone Merchants,
[Advt.] Box, Wilts.

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
Office:
No. 90, Cannon-street, E.C. [Advt.]

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